THE BOOK WAS DRENCHED

Text Problem Book

UNIVERSAL
LIBRARY

OU_164118

UNIVERSAL
LIBRARY

OSMANIA UNIVERSITY LIBRARY

Call No. 630.6354/IA.1/V6 Accession No. 17391

Author India. Govt. of

Title Royal - India. (evidence) 1928

This book should be returned on or before the date last marked below.

ROYAL COMMISSION

ON

AGRICULTURE IN INDIA

Volume VI

EVIDENCE

TAKEN IN THE

CENTRAL PROVINCES AND BERAR

CALCUTTA: GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH
1927

Government of India Publications are obtainable from the Government of India Central Publication Branch, Imperial Secretariat Building, 3, Government Place, West, Calcutta, and from the following Agents :—

EUROPE.—OFFICE OF THE HIGH COMMISSIONER FOR INDIA,
42, GROSVENOR GARDENS, LONDON, S.W 1
And at all Booksellers.

INDIA AND CEYLON.—PROVINCIAL BOOK DEPOTS :

MADRAS :—Office of the Superintendent, Government Press, Mount Road, Madras.
BOMBAY —Superintendent, Government Book Depôt, Town Hall, Bombay.
SIND —Library attached to the Office of the Commissioner in Sind, Karachi
BENGAL.—Office of the Bengal Secretariat Book Depôt, Writers' Buildings, Room No. 1, Ground Floor, Calcutta.
UNITED PROVINCES OF AGRA AND OUDH.—Office of the Superintendent of Government Press, United Provinces of Agra and Oudh, Allahabad
PUNJAB —Office of the Superintendent, Government Printing, Punjab, Lahore.
BURMA :—Office of the Superintendent, Government Printing, Burma, Rangoon
CENTRAL PROVINCES AND BERAR.—Office of the Central Provinces Secretariat, Nagpur
ASSAM —Office of the Superintendent, Assam Secretariat Press.
BIHAR AND ORRISA —Office of the Superintendent, Government Printing, Bihar and Orrissa, P O Gulzarbagh, Patna,
COORG :—Office of the Chief Commissioner of Coorg, Bangalore
NORTH-WEST FRONTIER PROVINCE —Office of the Manager, Government Printing and Stationery, Peshawar.

Thacker, Spink & Co, Calcutta and Simla
W Newman & Co, Ltd, Calcutta
R. Cambray & Co., Calcutta
S K Lahiri & Co, Calcutta
The Indian School Supply Depôt, 309, Bow Bazar Street, Calcutta, and 226, Nawabpur, Dacca
Butterworth & Co (India), Ltd, Calcutta
Rai M C Sarcar Bahadur & Sons, 90-2A, Harrison Road, Calcutta
The Weldon Library, 17, Park Street, Calcutta
Standard Literature Company, Limited, Calcutta
Association Press Calcutta
Chakervertty, Chatterjee & Co., Ltd, 13, College Square, Calcutta
The Book Company, Calcutta
James Murray & Co, 12, Government Place, Calcutta (For Meteorological publications only)
Roy Chaudhury & Co, 68/5, Russa Road, North Calcutta
Higginbotham & Co, Madras
V Kalyanarama Iyer & Co, Madras
P R. Rama Iyer & Co, Madras.
Rochouse & Sons, Madras
G A Nateson & Co, Publishers, George Town, Madras
The Modern Stores, Salem, Madras
Bright & Co, Trivandrum
The Booklover's Resort, Taikad, Trivandrum, South India
V S Swaminathan, Bookseller, West Tower Street, Madura
E M Gopalakrishna Kone, Pudumandapam, Madura
Vijapur & Co, Vizagapatam
Thacker & Co, Ltd, Bombay
D B Taraporevala, Sons & Co, Bombay
Sunder Pandurang, Bombay
Ram Chandra Govind & Sons, Kalbadevi, Bombay
N M Tripathi & Co, Booksellers, Princess Street, Kalbadevi Road, Bombay
R B Umadikar & Co, The Bharat Book Depôt, Dharwar.
Proprietor, New Kitabkhana, Poona.
The Manager, Oriental Book Supplying Agency, 15, Shukrawar, Poona City.
R S Gondhalekar's Book Depôt, Publisher and Bookseller, Budhwar Chawk, Poona City.
Managing Director, Co-operative Bookstall, Booksellers and Publishers, Poona City.
The Standard Bookstall, Karachi, Quetta, Delhi, Murree and Rawalpindi.
J Ray & Sons, 43, K. & L., Edwardes Road, Rawalpindi.
The Standard Bookstall, Quetta.
The Standard Book Depôt, Lahore, Lucknow, Nainital, Mussoorie, Dalhousie and Ambala Cantonment.
Karsandas Narandas & Sons, Surat.
Mangaldas & Sons, Booksellers and Publishers, Bhaga Talao, Surat
Mrs Radhabai Atmaram Sagoon, Kalbadevi Road, Bombay
A H Wheeler & Co, Allahabad, Calcutta and Bombay
The Karachi Book Depôt, Karachi
N B Mathur, Supdt, Nazir Kanun Hind Press, Allahabad
The North India Christian Tract and Book Society, 18 Clive Road, Allahabad
Ram Dayal Agarwala, 184, Katra, Allahabad.
Manager, Newal Kishore Press, Lucknow.
The Upper India Publishing House, Ltd., 41, Aminabad Park, Lucknow
Munshi Seeta Ram, Managing Proprietor, Indian Army Book Depôt, Juhi, Cawnpore
Rai Sahib M Gulab Singh & Sons, Mufid-i-Am Press, Lahore and Allahabad.
Rama Krishna & Sons, Booksellers, Anarkali, Lahore
Puri Brothers, Booksellers and Publishers, Katcheri Road, Lahore
The Tilak School Bookshop, Lahore
The Standard Bookstall, Lahore
Manager of the Imperial Book Depôt, 63, Chandney Chawk Street, Delhi
Oxford Book and Stationery Company, Delhi
Supdt., American Baptist Mission Press, Rangoon
Proprietor, Rangoon Times Press, Rangoon
The Modern Publishing House, Ltd., 30, Phayre Street, Rangoon
The International Buddhist Book Depôt, Post Box No 971, Rangoon.
Burma Book Club, Ltd, Rangoon.
Manager, the "Hitavada," Nagpur
Bhisey Brothers, Booksellers and Stationers, Sitabaldi, Nagpur
S C Talukdar, Proprietor, Students & Co., Cooch Behar
Times of Ceylon Co, Ltd, Colombo
The Manager, Ceylon Observer, Colombo.
The Manager, The Indian Book Shop, Benares City.
B. C Basak, Esq, Proprietor, Albert Library, Dacca
The Srivilliputtur Co-operative Trading Union, Ltd Srivilliputtur (Satur S I. R)
Banwari Lall, Esq., Pakariya Street, Pilibhit, United Provinces
The Manager, Educational Book Depôt, Jubbulpore.
Raghunath Prasad & Sons, Patna City.
Dandekar Brothers, Indore City.
The Hyderabad Book Depôt, Chaderghat, Hyderabad (Deccan).

INTERIM REPORT

To

THE KING'S MOST EXCELLENT MAJESTY.

May It Please Your Majesty,

We, the Commissioners appointed to examine and report on the present conditions of agricultural and rural economy in British India, and to make recommendations for the improvement of agriculture and to promote the welfare and prosperity of the rural population ; in particular to investigate :—(*a*) the measures now being taken for the promotion of agricultural and veterinary research experiment, demonstration and education, for the compilation of agricultural statistics, for the introduction of new and better crops and for improvement in agricultural practice, dairy farming and the breeding of stock ; (*b*) the existing methods of transport and marketing of agricultural produce and stock ; (*c*) the methods by which agricultural operations are financed and credit afforded to agriculturists ; (*d*) the main factors affecting rural prosperity and the welfare of the agricultural population ; and to make recommendations ; availing ourselves of Your Majesty's permission to report our proceedings from time to time, desire to submit to Your Majesty the minutes of the evidence which we have taken up to the 29th of January 1927 on the subject of our Inquiry.

All of which we most humbly submit for Your Majesty's most gracious consideration.

(Signed) LINLITHGOW,
Chairman.
(.) H. S. LAWRENCE.
(,,) T. H MIDDLETON.
(,,) J. MacKENNA.
(,,) H. CALVERT.
(,,) N. GANGULEE.
(,,) L. K. HYDER.
(,,) B. S. KAMAT.

(Signed) J. A. MADAN,
(,.) F. W. H. SMITH,
Joint Secretaries

21*st July* 1927.

CONTENTS

	PAGES
Terms of Reference	iii
Questionnaire	v xii
Evidence of—	
1. Mr. F. J. Plymen, I.A.S., Director of Agriculture	1-88 (ii)
2 Rai Bahadur Tundi Lal Powar, B.A., Deputy Director of Agriculture, Eastern Circle, Raipur .	89-99
3 Mr. Ramcharan Lal Dubey, Warraseoni, Balaghat District	100 124
4. Mr Purushottam Prasad Pandeya, Malguzar, Bulpur, Bilaspur District . . .	125-130
5. Col. H de L Pollard-Lowsley, C.M.G C.I.E., D.S.O., Chief Engineer, Irrigation	131-151
6. Mr Chhotelal, Extra-Assistant Commissioner, and 7 Mr. G. P. Burton, I C S., Deputy Commissioner, Raipur	152-167
8. Mr. C. M. Trivedi, I.C.S., Registrar of Co-operative Societies	168-195
9. Mr. R. G. Allan, M.A., Principal, Agricultural College, Nagpur . . .	196-240 (ii)
10 Rao Bahadur K. V. Brahma, B.A., LL.B., M.B.E., President, Berar Co-operative Institute, Limited, Amraoti.	241-270
11. Mr. D. O. Witt, Chief Conservator of Forests	271-295
12. Rao Bahadur M. G. Deshpande, Nagpur . . .	295-316
13. Rao Sahib T. S Korde, M.L.C., Landlord, Murtizapur, Akola	317-331
14. Mr. C. W. Wilson, M.R.C.V.S., I.V.S., Veterinary Adviser to Government, Central Provinces .	332-341
15. Mr C. J. Irwin, C.I.E., I.C.S., Commissioner, Jubbulpore Division	342-367
16. Mr. R. H. Beckett, Officiating Director of Public Instruction . . .	368-385

	PAGES
Evidence of—	
17. Mr. Amanat Ali, Burhanpur, Khandwa District	386-398
18. Mr. B. G. Khaparde, B.A., LL B., M.L.C., Amraoti	399-410
19. Lieut.-Col. H. G. Stiles Webb, D.P.H , D.T.M.&H. (Camb.), I.M.S., Officiating Director of Public Health . . .	411-426
20. Mr. Shyam Sundar Bhargava, Managing Proprietor, Messrs Chandrabhan Behari Lall, Jubbulpore	427-441
21. Mr. H. H Peterson, B.A., Secretary, Y. M. C. A., and President, The Empress Mills Co-operative Stores, Limited, Nagpur . . .	442-451
22. Rao Sahib G. N. Sahasrabudhe, Pleader, Ellichpur, Amraoti District	452-477
23. Mr. M. R Dokras, Pleader, Chandur, Amraoti District	478-495
24. Rai Sahib Dadu Dwarkanath Singh, Talukdar, Seoni	496-515
25. Mr. Kaluram Pochory, Representing the Agricultural Association, Gadarwara .	516-528
26 Mr. K. P Pande, LL.B , M.L.C., Representing the Tahsil Agricultural Association, Sihora, Jubbulpore	529-557
Index	i cxxx i
Glossary	cxxxiii-cxxxvii

TERMS OF REFERENCE

• Generally,

To examine and report on the present conditions of agriculture and rural economy in British India and to make recommendations for the improvement of agriculture and the promotion of the welfare and prosperity of the rural population ;

In particular to investigate—

(*a*) the measures now being taken for the promotion of agricultural and veterinary research, experiment, demonstration and education, for the compilation of agricultural statistics, for the introduction of new and better crops and for improvement in agricultural practice, dairy farming and the breeding of stock ;

(*b*) the existing methods of transport and marketing of agricultural produce and stock ;

(*c*) the methods by which agricultural operations are financed and credit afforded to agriculturists ;

(*d*) the main factors affecting rural prosperity and the welfare of the agricultural population ;

and to make recommendations.

It will not be within the scope of the Commission's duties to make recommendations regarding the existing system of landownership and tenancy or of the assessment of land revenue and irrigation charges, or the existing division of functions between the Government of India and the local Governments. But the Commission shall be at liberty to suggest means whereby the activities of the Governments in India may best be co-ordinated and to indicate directions in which the Government of India may usefully supplement the activities of local Governments.

QUESTIONNAIRE

Part I

Question.

1. Research.
2. Agricultural education.
3. Demonstration and propaganda.
4. Administration.
5. Finance.
6. Agricultural indebtedness.
7. Fragmentation of holdings.

Part II

8. Irrigation.
9. Soils.
10. Fertilisers.
11. Crops.
12. Cultivation.
13. Crop protection.
14. Implements.

Part III

15. Veterinary.
16. Animal husbandry.

Part IV

17. Agricultural industries.
18. Agricultural labour.
19. Forests.
20. Marketing.
21. Tariffs and sea freights.
22. Co-operation.
23. General education.
24. Attracting capital.
25. Welfare of rural population.
26. Statistics.

QUESTIONNAIRE

Part I

1. Research.

(*a*) Have you suggestions to advance for the better organisation, administration and financing of—

(*i*) All research affecting the welfare of the agriculturist, including research into the scientific value of the indigenous theory and traditional methods of agriculture,

(*ii*) Veterinary research ?

(*b*) If in cases known to you progress is not being made because of the want of skilled workers, or field or laboratory facilities for study or by reason of any other handicaps, please give particulars. [Suggestions of a general kind should be made under (*a*) ; answers under this heading should relate to specific subjects. The purpose is to secure a list of the problems met with by scientific investigators in the course of their work which are being held over because of lack of resources or deficient organisation.]

(*c*) Can you suggest any particular subject for research not at present being investigated to which attention might usefully be turned ?

2. Agricultural Education.

With reference to any form of agricultural education of which you may have experience, please state your views on the following :—

(*i*) Is the supply of teachers and institutions sufficient ?

(*ii*) Is there an urgent need for extension of teaching facilities in any district or districts known to you personally ?

(*iii*) Should teachers in rural areas be drawn from the agricultural classes ?

(*iv*) Are the attendances at existing institutions as numerous as you would expect in present circumstances ; if not, state reasons. Can you suggest measures likely to stimulate the demand for instruction ?

(*v*) What are the main incentives which induce lads to study agriculture ?

(*vi*) Are pupils mainly drawn from the agricultural classes ?

(*vii*) Are there any modifications in existing courses of study which appear to be called for ; if so, what are they ?

(*viii*) What are your views upon (*a*) nature study ; (*b*) school plots ; (*c*) school farms ?

(*ix*) What are the careers of the majority of students who have studied agriculture ?

(*x*) How can agriculture be made attractive to middle class youths ?

(*xi*) Are there recent movements for improving the technical knowledge of students who have studied agriculture ?

(*xii*) How can adult education in rural tracts be popularised ?

(*xiii*) In suggesting any scheme for better educational facilities in rural areas, please give your views for (*a*) its administration and (*b*) its finance.

3. Demonstration and Propaganda.

(*a*) What are the measures which in your view have been successful in influencing and improving the practice of cultivators ?

(*b*) Can you make suggestions for increasing the effectiveness of field demonstrations ?

(*c*) Can you suggest methods whereby cultivators may be induced to adopt expert advice ?

(*d*) If you are aware of any striking instances of the success or the failure of demonstration and propaganda work, please give particulars and indicate the reasons for success or for failure.

4. Administration.

(*a*) Do you wish to suggest means towards the better co-ordination of the activities of the Governments in India or to indicate directions in which the Government of India may usefully supplement the activities of the local Governments ?

(*b*) Is it your opinion that the expert scientific knowledge required in the development of agriculture in the different Provinces could be supplied to a greater extent than is the case at present by increasing the scientific staff of the Government of India ? If so, indicate the types of work which would benefit by pooling the services of experts, and suggest how that work should be controlled.

(*c*) Are you satisfied from the agricultural standpoint with the services afforded by—

(*i*) The Agricultural and Veterinary Services,

(*ii*) Railways and steamers,

(*iii*) Roads,

(*iv*) Meteorological Department,

(*v*) Posts, and

(*vi*) Telegraphs, including wireless ?

If not, please indicate directions in which you think these Services might be improved or extended.

5. Finance.

(*a*) What are your views as to the steps that should be taken for the better financing of agricultural operations and for the provision of short and long-term credit to cultivators ?

(*b*) Do you wish to suggest means whereby cultivators may be induced to make fuller use of the Government system of *taccavi* ?

6. Agricultural Indebtedness.

(*a*) What in your opinion are :—

(*i*) the main causes of borrowing,

(*ii*) the sources of credit, and

(*iii*) the reasons preventing repayment.

(*b*) What measures in your opinion are necessary for lightening agriculture's burden of debt ? For example, should special measures be taken to deal with rural insolvency, to enforce the application of the Usurious Loans Act, or to facilitate the redemption of mortgages ?

(*c*) Should measures be taken to restrict or control the credit of cultivators such as limiting the right of mortgage and sale ? Should non-terminable mortgages be prohibited ?

7. Fragmentation of Holdings.

(*a*) Do you wish to suggest means for reducing the loss in agricultural efficiency attendant upon the excessive subdivision of holdings ?

(*b*) What are the obstacles in the way of consolidation and how can they be overcome ?

(*c*) Do you consider legislation to be necessary to deal with minors, widows with life interest, persons legally incapable, alienation and dissentients, and to keep disputes out of the courts ?

PART II

8. Irrigation.

(*a*) Name any district or districts in which you advocate the adoption of new irrigation schemes, or suggest extensions or improvements in the existing systems or methods of irrigation by—

(*i*) Perennial and non-perennial canals,
(*ii*) Tanks and ponds,
(*iii*) Wells.

What are the obstacles in your district or Province to the extension of irrigation by each of the above methods ?

(*b*) Are you satisfied with the existing methods of distributing canal water to cultivators ? Describe the methods that have been employed to prevent wastage of water by evaporation and by absorption in the soil. What form of outlet for distribution to cultivators at the tail end do you regard as the most equitable and economical ? Have these methods and devices been successful, or do you wish to suggest improvements ?

(*N.B.*—Irrigation charges are *not* within the terms of reference of the Commission, and should not be commented upon.)

9. Soils.

(*a*) Have you suggestions to make—

(*i*) for the improvement of soils, whether by drainage or other means, not dealt with under other headings in this questionnaire.
(*ii*) for the reclamation of Alkali (Usar) or other uncultivable land,
(*iii*) for the prevention of the erosion of the surface soil by flood water ?

(*b*) Can you give instances of soils known to you which, within your recollection, have—

(*i*) undergone marked improvement,
(*ii*) suffered marked deterioration ?

If so, please give full particulars.

(*c*) What measures should Government take to encourage the reclamation of areas of cultivable land which have gone out of cultivation ?

10. Fertilisers.

(*a*) In your opinion, could greater use be profitably made of natural manures or artificial fertilisers ? If so, please indicate the directions in which you think improvement possible.

(*b*) Can you suggest measures to prevent the fraudulent adulteration of fertilisers ?

(*c*) What methods would you employ to popularise new and improved fertilisers ?

(*d*) Mention any localities known to you in which a considerable increase in the use of manures has recently taken place.

(*e*) Has effect of manuring with phosphates, nitrates, sulphate of ammonia, and potash manures been sufficiently investigated ? If so, what is the result of such investigation ?

(*f*) What methods would you employ to discourage the practice of using cowdung as fuel ?

11. Crops.

(*a*) Please give your views on—

(*i*) the improvement of existing crops,

(*ii*) the introduction of new crops including fodder crops,

(*iii*) the distribution of seeds,

(*iv*) the prevention of damage by wild animals.

(*b*) Can you suggest any heavy yielding food crops in replacement of the present crops ?

(*c*) Any successful efforts in improving crops or substituting more profitable crops which have come under your own observation should be mentioned.

12. Cultivation.

Can you suggest improvements in—

(*i*) the existing system of tillage, or

(*ii*) the customary rotations or mixtures of the more important crops ?

13. Crop Protection, Internal and External.

Please give your views on—

(*i*) The efficacy and sufficiency of existing measures for protection of crops from external infection, pests and diseases.

(*ii*) The desirability of adopting internal measures against infection.

14. Implements.

(*a*) Have you any suggestion for the improvement of existing, or the introduction of new, agricultural implements and machinery ?

(*b*) What steps do you think may usefully be taken to hasten the adoption by the cultivator of improved implements ?

(*c*) Are there any difficulties which manufacturers have to contend with in the production of agricultural implements or their distribution for sale throughout the country ? If so, can you suggest means by which these difficulties may be removed ?

PART III

15. Veterinary.

(*a*) Should the Civil Veterinary Department be under the Director of Agriculture or should it be independent ?

(*b*) (*i*) Are dispensaries under the control of Local (District) Boards ? Does this system work well ?

(*ii*) Is the need for expansion being adequately met ?

(*iii*) Would you advocate the transfer of control to Provincial authority ?

(*c*) (*i*) Do agriculturists make full use of the veterinary dispensaries ? If not, can you suggest improvements to remedy this ?

(*ii*) Is full use made of touring dispensaries ?

(*d*) What are the obstacles met with in dealing with contagious diseases ? Do you advocate legislation dealing with notification, segregation, disposal of diseased carcases, compulsory inoculation of contacts and prohibition of the movement of animals exposed to infection ? Failing legislation, can you suggest other means of improving existing conditions ?

(*e*) Is there any difficulty in securing sufficient serum to meet the demand ?

(*f*) What are the obstacles in the way of popularising preventive inoculation ? Is any fee charged, and, if so, does this act as a deterrent ?

(*g*) Do you consider that the provision of further facilities for research into animal disease is desirable ?

If so, do you advocate that such further facilities should take the form of—

(*i*) an extension of the Muktesar Institute, or

(*ii*) the setting up, or extension of, Provincial Veterinary Research Institutions ?

(*h*) Do you recommend that special investigations should be conducted by—

(*i*) officers of the Muktesar Institute, or

(*ii*) research officers in the Provinces ?

(*i*) Do you recommend the appointment of a Superior Veterinary Officer with the Government of India ? What advantages do you expect would result from such an appointment ?

16. Animal Husbandry.

(*a*) Do you wish to make suggestions for—

(*i*) improving the breeds of livestock,

(*ii*) the betterment of the dairying industry,

(*iii*) improving existing practice in animal husbandry ?

(*b*) Comment on the following as causes of injury to cattle in your district—

(*i*) Overstocking of common pastures,

(*ii*) Absence of enclosed pastures, such as grass borders in tilled fields,

(*iii*) Insufficiency of dry fodder such as the straw of cereals or the stems and leaves of pulses,

(*iv*) Absence of green fodders in dry seasons,

(*v*) Absence of mineral constituents in fodder and feeding stuffs.

(*c*) Please mention the months of the year in which fodder shortage is most marked in your district. For how many weeks does scarcity of fodder usually exist ? After this period of scarcity ends how many weeks elapse before young growing cattle begin to thrive ?

(*d*) Can you suggest any practicable methods of improving or supplementing the fodder supply that would be applicable to your district ?

(*e*) How can landowners be induced to take a keener practical interest in these matters ?

Part IV

17. Agricultural Industries.

(*a*) Can you give any estimate of the number of days of work done by an average cultivator on his holding during the year ? What does he do in the slack season ?

(*b*) Can you suggest means for encouraging the adoption of subsidiary industries ? Can you suggest any new subsidiary industries to occupy the spare time of the family which could be established with Government aid ?

(*c*) What are the obstacles in the way of expansion of such industries as beekeeping, poultry rearing, fruit growing, sericulture, pisciculture, lac culture, rope making, basket making, etc. ?

(*d*) Do you think that Government should do more to establish industries connected with the preparation of agricultural produce for consumption, such as oil pressing, sugar making, cotton ginning, rice hulling, utilisation of wheat straw for card-board, utilisation of cotton seed for felt, fodder, oil and fuel, utilisation of rice straw for paper, etc. ?

(*e*) Could subsidiary employment be found by encouraging industrial concerns to move to rural areas ? Can you suggest methods ?

(*f*) Do you recommend a more intensive study of each rural industry in its technical, commercial and financial aspects, with a view to, among other things, introduction of improved tools and appliances ?

(*g*) Can you suggest any other measures which might lead to greater rural employment ?

(*h*) Can you suggest means whereby the people could be induced to devote their spare time to improving the health conditions of their own environment ?

18. Agricultural Labour.

(*a*) What measures, if any, should be taken to attract agricultural labour from areas in which there is a surplus to—

(*i*) areas under cultivation in which there is a shortage of such labour ? and

(*ii*) areas in which large tracts of cultivable land remain uncultivated ?

Please distinguish between suggestions designed to relieve seasonal unemployment and proposals for the permanent migration of agricultural population.

(*b*) If there is any shortage of agricultural labour in your Province, what are the causes thereof and how could they be removed ?

(*c*) Can you suggest measures designed to facilitate the occupation and development, by surplus agricultural labour, of areas not at present under cultivation ?

19. Forests.

(*a*) Do you consider that forest lands as such are at present being put to their fullest use for agricultural purposes ? For instance, are grazing facilities granted to the extent compatible with the proper preservation of forest areas ? If not, state the changes or developments in current practice which you consider advisable.

(*b*) Can you suggest means whereby the supply of firewood and fodder in rural areas may be increased ?

(*c*) Has deterioration of forests led to soil erosion ? What remedies would you suggest for erosion and damage from floods ?

(*d*) Can you indicate any methods by which supply of moisture in the soil, the rainfall and supply of canal water can be increased and regulated by afforestation or by the increased protection of forests so as to benefit agriculture ? Would the same methods be useful in preventing the destruction by erosion of agricultural land ?

(*e*) Is there an opening for schemes of afforestation in the neighbourhood of villages ?

(*f*) Are forests suffering deterioration from excessive grazing ? Is soil erosion being thereby facilitated ? Suggest remedies.

20. Marketing.

(*a*) Do you consider existing market facilities to be satisfactory ? Please specify and criticise the markets to which you refer, and make suggestions for their improvement.

(*b*) Are you satisfied with the existing system of marketing and distribution ? If not, please indicate the produce to which you refer and describe and criticise in detail the channels of marketing and distribution from the producer to the consumer in India (or exporter in the case of produce exported overseas). State the services rendered by each intermediary and whether such intermediary acts in the capacity of merchant or commission agent, and comment upon the efficiency of these services and the margins upon which such intermediaries operate. Please describe

the method by which each transaction is financed, or in the case of barter, by which an exchange is effected.

(*c*) Do you wish to suggest steps whereby the quality, purity, grading or packing of agricultural produce may be improved, distinguishing where possible between produce destined for—

(*i*) Indian markets ?

(*ii*) Export markets ?

(*d*) Do you think that more effective steps might be taken to place at the disposal of cultivators, merchants and traders information as to market conditions, whether Indian or overseas ; crop returns ; complaints as to Indian produce from wheresoever originating ; and agricultural and marketing news in general ?

21. Tariffs and Sea Freights.

Do existing (*a*) customs duties, both import and export, and (*b*) sea freights adversely affect the prosperity of the Indian cultivator ? If so, have you any recommendations to make ?

22. Co-operation.

(*a*) What steps do you think should be taken to encourage the growth of the co-operative movement—

(*i*) by Government,

(*ii*) by non-official agencies ?

(*b*) Have you any observations to make upon—

(*i*) Credit societies ;

(*ii*) Purchase societies ;

(*iii*) Societies formed for the sale of produce or stock ;

(*iv*) Societies for effecting improvements—*e.g.*, the digging of wells and the construction of bunds, walls and fences, or the planting of hedges ;

(*v*) Societies formed for the aggregation of fragmented holdings and their redistribution in plots of reasonable size ;

(*vi*) Societies for the co-operative use of agricultural machinery ;

(*vii*) Societies for joint farming ;

(*viii*) Cattle breeding societies ;

(*ix*) Societies formed for any purpose connected with agriculture or with the betterment of village life, but not specified above ?

(*c*) Where co-operative schemes for joint improvement, such as co-operative irrigation or co-operative fencing or a co-operative consolidation of holdings scheme, cannot be given effect to owing to the unwillingness of a small minority to join, do you think legislation should be introduced in order to compel such persons to join for the common benefit of all ?

(*d*) Do you consider that those societies of which you have personal knowledge have, in the main, achieved their object ?

23. General Education.

(*a*) Do you wish to make observations upon existing systems of education in their bearing upon the agricultural efficiency of the people ? If you make suggestions, please distinguish, as far as possible, between—

(*i*) Higher or collegiate,

(*ii*) Middle school, and

(*iii*) Elementary school education.

(*b*) (*i*) Can you suggest any methods whereby rural education may improve the ability and culture of agriculturists of all grades while retaining their interest in the land ?

(*ii*) What is your experience of compulsory education in rural areas ?

(*iii*) What is the explanation of the small proportion of boys in rural primary schools who pass through the fourth class ?

24. Attracting Capital.

(*a*) What steps are necessary in order to induce a larger number of men of capital and enterprise to take to agriculture ?

(*b*) What are the factors tending to discourage owners of agricultural land from carrying out improvements ?

25. Welfare of Rural Population.

(*a*) Outside the subjects enumerated above, have you any suggestions to offer for improving hygiene in rural areas and for the promotion of the general well-being and prosperity of the rural population ?

(*b*) Are you, for instance, in favour of Government conducting economic surveys in typical villages with a view to ascertaining the economic position of the cultivators ? If so, what, in your opinion, should be the scope and methods of such enquiries ?

(*c*) If you have carried out anything in the nature of such intensive enquiry, please state the broad conclusions which you reached.

26. Statistics.

(*a*) Do you wish to make suggestions for the extension or improvement of the existing methods of—

(*i*) ascertaining areas under cultivation and crops ;

(*ii*) estimating the yield of agricultural produce ;

(*iii*) enumerating livestock and implements ;

(*iv*) collecting information on land tenure, the incidence of land revenue and the size of the agricultural population ;

(*v*) arranging and publishing agricultural statistics ?

(*b*) Have you any other suggestions to make under this heading ?

MINUTES OF EVIDENCE

TAKEN BEFORE THE

ROYAL COMMISSION ON AGRICULTURE.

Monday, January 17th, 1927.

RAIPUR.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.
Sir JAMES MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
RAJA SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO OF PARLAKIMEDI.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Mr. C. U. WILLS, I.C.S.
Sir SHANKAR MADHO CHITNAVIS, KT., I.S.O. } (*Co-opted Members*).

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH. } (*Joint Secretaries*).

Mr. F. J. PLYMEN, I.A.S., Director of Agriculture, Central Provinces and Berar.

Extracts from Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar referred to by Mr. F. J. Plymen in his replies to the Questionnaire.

CHAPTER I.—Tenures and Holdings.

* * * *

6. *Fragmentation in Chhattisgarh.*—Only in the Chhattisgarh Division is the fragmentation of holdings a serious problem. Elsewhere, though it cannot be said that holdings are compact, the sub-division into separate fields is not so minute as to cause anxiety.

In Chhattisgarh the natural tendency to sub-division inherent in the Hindu and Mahommedan law of succession has been exaggerated by the old time practice of periodical redistribution of the fields in each village so as to ensure that each cultivator got his share of the different kinds of lands. It is common to find a holding of 10 acres scattered about in 40 tiny little plots of land, and the number of fields in a Chhattisgarh village will frequently run to a thousand for every hundred found in other tracts. The evils of such a system in the path of agricultural progress are obvious.

Hitherto there has been little success in efforts at consolidation and such progress as has been made has generally been due to the efforts of the people, usually the landlord, acting alone. The subject was first attacked in 1905, but was allowed to drop from 1907 to 1912, when it was once more taken up. Again the War interfered, but in the past year, the subject has again come into prominence. The chief obstacles to progress are the apathy of the people and the low standard of living that prevails, suspicion of change and especially the feeling that the rich man and not the poor man will be the gainer, proneness to litigation and caste disputes. In addition legal difficulties regarding transfer of rights in exchanged holdings are a considerable hindrance. As an example of what can be effected where there is a readiness to co-operate in the reform the village of Matwari in the Drug district can be instanced. The number of fields when the village, consisting of 827 acres only, was last renumbered, was 2,934. By family sub-division this number rose to 3,651. After consolidation it stands at 243 and the average number of fields held by each cultivator has fallen from 98 to 8. The problem is now engaging the attention of Government. Its solution will require special legislation and special staff, for the failure in the past can partly at least be attributed to the fact that the work was entrusted to busy revenue officers to do what they could in the time they could spare from their regular duties.

* * * *

CHAPTER IV.—Marketing.

21. *Crop movements*.—Cotton goes from the west of the Province almost entirly to Bombay. Some is used in local mills or goes to Ahmedabad but very little eastward to Calcutta. Wheat goes to Bombay, though there is a distinct movement from the wheat and plateau tracts to Berar.

The rice of the Wainganga tract goes chiefly to Nagpur and Berar and some to the Nerbudda valley. That of Chhattisgarh goes partly to Jubbulpore and partly to Calcutta. Though the movement of rice is more active than it was, the export from the Province is not so important as might be expected from the large area under this crop. The oil-seeds export of the Province is considerable and moves chiefly to Bombay.

22. *Market practice*.—Most of the foreign trade is in the hands of a limited number of large firms who have established upcountry agencies in the larger towns. At times, as in the organised cotton markets of Berar, they buy direct from the cultivator but usually they deal through brokers. There are also many local firms of varying importance; these purchase from the cultivator and either sell to the larger firms or consign direct. Below these there are the village *banias* who lend money or grain to the cultivators; they pay low prices, recovering grain in lieu of money or seed advanced. Though reserving some of this return for lending, their surplus goes on to the district markets and is taken up by the bigger firms. Lastly there are the itinerant traders who move from village to village, generally working in the more distant areas, paying something like 10 to 16 per cent below the market rate in grain and often much below this in cotton. These either pay the cultivator on the spot direct or on delivery at the nearest market of any size. In the case of paddy, they generally buy as *dhan* (unhusked). They sell their grain in the district markets to larger merchants.

In tracts of more advanced character, for instance in the rice area of Balaghat, Bhandara and nearer the bigger markets in Chhattisgarh, the grower sells his crops at the big markets on the railway or, near Nagpur, he may bring it into the main central market of that city. There is considerable market competition at these district centres on the railway. Sales and purchases are effected through brokers and commission agents.

MR. F. J. PLYMEN.

At Nagpur the grain is sold by auction and this is coming in elsewhere. Brokerage is charged at the rate of 3 annas per 400 lbs. and the municipal charge is Rs. 2 octroi and 8 annas market charge per cart of about 600 lbs.

The cultivators who bring their produce into the district markets undoubtedly get a better price than when selling to the itinerant trader and very much better one than when selling under the semi-compulsion of debt to their banker, the village *bania*. The open markets, however, have their drawbacks in the form of petty charges, unfair deductions on the score of quality or the presence of a 'ring' of brokers. Moreover as the markets are administered by municipal committees cultivating interests are as a rule not adequately represented. In most markets the prices are not published. This and a more adequate means of dealing with brokers who fraudulently exploit the cultivator would help matters. The formation of co-operative sale societies by members of agricultural associations is, however, the only satisfactory means of getting a fair price in the grain markets.

23. *Cotton marketing.*—Cotton requires separate mention. Marketing practice and conditions vary in the Central Provinces and in Berar. The Berar markets are highly organised and regulated by rules, and on paper they provide an equitable market.

The necessity of guarding the buyer against a cart load being not up to sample is of course necessary, but it is here where the seller is most open to being swindled by unfair deductions once the cart has reached the ginnery, unless, as is not always the case, he is a sufficiently keen businessman to be able to meet the buyer on his own ground.

These markets in Berar have been the subject of a close investigation instituted by the Indian Central Cotton Committee. The results of this inquiry have not yet been published but they indicate that a strict application of the rules to govern these markets will be necessary to prevent a good deal of the fraud at present practised on the seller

In the Nagpur-Wardha area there is a big central market at Nagpur and a number of smaller ones in the districts. These markets are well organised from the point of view of the purchaser. There is certainly competition but it is organised competition and therefore not unrestricted. The procedure at most markets is that the purchasers acting on telegraphic information from Bombay agree among themselves as to the maximum price they will offer for the best quality of the particular market. They arrive at this maximum price by a sort of auction process—not auction in the ordinary sense of the term, because the price is arrived at before any cotton changes hands or the seller comes into the picture. In other words, it is not the commodity which is auctioned but the price which will be paid. The maximum price for the day is then declared. Business between firms and sellers is carried through by brokers. If the seller's cotton is up to the best standard, he gets the full price. If not, it is subject to deduction in the weight paid for This is where the broker comes in. He brings the two parties to agreement Deductions are made on account of dirt, dampness, rain or late picking, and varies in amount according to the place of origin. In markets where good quality cotton is the rule, deduction is very small. An ordinary rate at Nagpur is a deduction of 28 to 40 lbs. per load off the weight paid for. Brokerage is 8 annas a cart.

At one or two markets the practice differs. The price is not fixed and competition is unrestricted, each cart being sold on its merits. The result is that the grower gets about Rs. 2 per *khandi* more at such markets.

CHAPTER V.—Prices, Wages and Labour.

* * * *

25. *Shortage of agricultural labour.*—In all agricultural tracts, there has been of recent years a distinct indication of a shortage of labour and with this shortage a marked rise in its price. The intensity of the shortage and the price demanded and paid varies from tract to tract. It is most intense in the cotton tract, less so in the wheat and least in the rice tract, but, generally speaking, the labouring classes have never been so prosperous as they are today.

The shortage is largely due to the influenza epidemic of 1919, but it is also affected by other factors which operate to different extents in different

areas. The rise in the price of labour is in part the outcome of the higher cost of food supplies and in part the result of a shortage of labourers.

The agricultural operations of the cotton tract and the wheat tract would not be possible but for the fact that there is a steady flow of immigrant labour, largely of a seasonal or periodic type, from areas outside the Province and from one area of the Province to another. The rice tracts, however, depend on their own labour supply as also does the plateau, though in both there are certain internal movements.

26. *Wages in the Chhattisgarh area.*—In Chhattisgarh, where the standard of living is low and pressure of population is not sufficiently great to stimulate intense forms of cultivation like transplantation, the price of labour, as compared with other areas, is low. Though principally paid in the form of grain, it may be taken as equivalent to Rs. 7 per mensem for permanent labour and at 4 annas for male and 2 annas 6 pies for women for casual daily labour. In the rice tract, work is plentiful from June to November and in certain sections, where cold weather crops are extensively grown in addition to paddy, it can keep labour employed most of the year. Where, however, the cropping is chiefly restricted to paddy, there is little work after the harvest is once in. Again, in this tract there is a large number of holdings of two to four acres which by themselves are unable to support the owners. These three factors, *i.e.,* a low standard of living, an absence of work for seven to eight months per annum and the existence of a large body of small cultivators whose holdings are entirely inadequate, make this tract the principal area in the Central Provinces from which emigration takes place. The labour of this area is found in other parts of the Central Provinces to the extent of 267,000 and is utilised in the tract itself on irrigation construction work. The Chhattisgarh labourer also migrates in very considerable numbers to the iron and coalfields of Orissa and Bengal and the tea gardens of Assam. As many as 48,000 move to Assam and the majority of 80,000 to the coal and iron industries. A considerable amount of the movement is seasonal in character. The labour leaves after the harvest of the paddy and returns for the sowing. An appreciable amount, derived from the body of small holders who find it more advantageous to make over the farming of their allotments to others, is of longer duration.

Consolidation of holdings which might reasonably be expected to lead to an increase in the intensity of cultivation would undoubtedly affect the labour problem in other areas.

27. *Wages in the Wainganga tract.*—The payment of labour in the Wainganga area, except near the larger towns, is usually in kind. When paid in cash, monthly labour receives Rs. 7 to Rs. 8 and the average daily man labour of a casual character is paid at 4 to 5 annas and women at 2½ to 3 annas per day. The pressure of rural population is greater, holdings are comparatively consolidated and cultivation for the most part is much more intensive and transplantation is common. Seasonal demands for agricultural labour are more acute. A woman at transplanting time may get from Re. 1 to Re. 1-8-0 for three days' work. In addition there is a growing competitive industrial demand, the manganese mines, the *bidi* factories, the industrial claims of Nagpur and to some extent the needs of the cotton tract to the west all competing for casual labour. Labour difficulties are also increased by caste friction. This rice tract thus differs from Chhattisgarh in that its standard of agriculture requires more labour while there are more active outside agencies which compete for an already limited supply when measured by this standard. The man who cultivates his own land does not feel this in the way in which it affects employers. There are areas of land commanded by irrigation which, because of labour shortage, are not utilised and the extension of transplantation as a method of increasing food supplies has been checked, except in the more southern portions which are less affected. In this tract there is a seasonal movement of labour from broadcasting to transplanting areas and also some immigration from the other rice tract.

28. *Migration to the wheat area.*—The labour in the wheat area requires a good deal higher wage than it did, but though the Agricultural Department has the necessary machinery which will materially save labour, it is only recently that the employer of such labour, the bigger grower, has begun to think of the utilisation of machinery and it may be argued that, though he complains about the cost, he is still able to pay the wage that labour demands.

MR. F. J. PLYMEN.

The wheat tract receives its labour at harvest time from two sources. There are two currents of immigration of labour into the Central Provinces, one from the north-east, the other from the south-west. The wheat area takes up most of the north-east flow, which is derived from the Central Indian Agency and the east of the United Provinces and is absorbed in Jubbulpore, Saugor and Damoh. Though a proportion of this is attracted by the industries of Jubbulpore, a very conideable mass is of a periodic character and is influenced by the needs of the harvest of the wheat crop. Between 80,000 and 90,000 harvesters come annually into these districts from this source.

The other source of labour in this tract is from the plateau, something like 28,000 to 30,000 coming in annually to seek employment in the western districts of the wheat tract. They are largely aboriginals, Gonds, Korkus and the like, who, having harvested their millets and rice, migrate into the Nerbudda valley. A bad wheat year hits these people very seriously. Though the wheat might be harvested quicker, if there were more labour and though high wages or the equivalent in kind are demanded at harvest time, the really critical season in the wheat tract is the sowing season, when it is dependent on its own supply Returns are undoubtedly lower owing to the delay which takes place at this season and this probably accounts for the much greater interest taken in an automatic seed drill than in a reaping machine in this tract.

* * * *

31. *Migration of labour to the cotton tract.*—There is a distinct immigrant population from outside the boundaries of the Province coming in from the south-west. Thus Nimar in the last census showed 53,000 as against 43,000 in the previous census, but this was in part due to the peculiarity of the conditions of the census year and shortage of water in extra provincial areas In addition there is a steady flow of population into this district from the west of the plateau.

The southern and border districts of Berar showed 79,000 external immigrants, the vast majority of whom are attracted by trade or by the seasonal labour demand of the gins and the cotton fields.

In the rest of Berar 240,000 of the population recorded in the last census were from other parts of the Provinces. Though possibly to a considerable degree attracted by trade, they include a distinct body of periodic labour influenced by the wages offered at the cotton gins and on the cotton fields. In spite of the natural increase in population and an inflow from Bombay and Hyderabad and from other parts of the Central Provinces, a certain definite percentage of which is undoubtedly attracted by agricultural work, there has of recent years been a definite reduction in the amount of labour available for agricultural purposes. All over the tract during the last few years, bigger growers dependent on hired labour, particularly for weeding and picking, have found this difficulty. The high wages offered are due partly to the higher price of necessities and partly to the reduction of available supplies of labour or at least the failure of the supply to meet the extension of area under cotton.

Scarcity in the field is usually attributed to the better wages obtaining at the ginneries during the ginning season. This industrial competition undoubtedly operates at the picking season attracting to the urban centres the natural labour population and also a portion of the periodic immigrant flow, but it does not account for the shortage earlier in the year.

The shortage of field labour is in part due to the withdrawal from the ranks of the agricultural labour population of a part of those who in the past took an active share in the cultivation. The high prices ruling for cotton during the last decade and the money coming in on this account to small holders have tended to reduce the number of women seeking employment in the fields, the need for such effort on their part being less. The same cause has led to the conversion of some of the working small holders into direct employers of labour for work they once did themselves, but which the prices obtained for cotton permit them to get others to do. These men thus increase the demand on existing supplies. A fall in the price of cotton will tend to an increase in casual labour, chiefly in the shape of the labour absorbed by this class. With the heavy slump of prices in 1925-26, casual labour at once showed signs of becoming more fluid.

* * * *

CHAPTER VIII.—Finance of Agriculturists.

45. *Banking influence.*—The joint stock banks do not play any very direct part in finance. The Imperial Bank in the Central Provinces contents itself with loans to the co-operative banks and thus indirectly assists. The Allahabad Bank finances the bigger grain buyers who can thus at once pay off the grower. The banks advance money against the value of grain brought in by the grain buyer and lodged in the sealed godowns owned by the bank. The advance made is well covered by the grain. When the buyer wishes to dispose of his grain, he pays the banks the original value of such grain as he wishes to remove for sale.

The bigger Indian banks working on indigenous lines are more closely associated with the financing of agriculture. The include bigger professional moneylenders, and their business consists in lending to smaller moneylenders and landlords. The Marwari banker prefers to finance a lender rather than take up mortgages, but the differences between their business and that of the smaller village moneylender is inconsiderable.

The Indian banking houses provide a series of middlemen doing business, the method of which varies from those of a western bank to those of the petty village moneylender.

46. *Causes of indebtedness*—Agriculture all the world over requires the assistance of borrowed capital. Here, however, capital is scarce and interest high. There is not enough money to enable the country to be farmed as it might be. The agriculturist of these Provinces is subject to the extraordinary fluctuations in values which obtain in India, militating against sound finance and reacting heavily against the small holder. For example, the cotton crop was one year valued at four crores and the next at eleven. Differences like this lead to debt and thriftlessness. If, moreover, the extravagant social customs which bear no relation to individual wealth but are governed by caste needs are taken into account, the causes of his indebtedness can be understood. The lender of money, so long as he only lends and recovers his loan and interest, is a beneficial economic factor; but, unfortunately, this is not always his only form of activity.

Mr. McDougall, in his economic study of a Chhattisgarhi village, shows that six-sevenths of the total debt of the village was for unproductive purposes and that, were it not for the principal and interest which the villagers had to meet on account of such loans, the return from the average whole-time cultivator's land would have left him with a distinct margin of saving over the demands of his annual family budget.

47. *Sources of capital in villages.*—The two commonest village lenders are the malguzar of the village and the village *bania* or *sowcar* who may or may not be the malguzar. The malguzar, if he is a resident cultivator, of the same caste as his tenants and not a land-grabber, is a beneficial lender and the condition of the village is good. But very frequently he is an alien landlord, who aims at getting his tenant as completely as possible into debt and then, taking all his produce, either leaves him just sufficient for bare maintenance or actually deprives him of his land. This class of moneylending landlord is a curse. He represents one of the chief obstacles to agricultural and economic advance. He is prevalent in many parts of the wheat and rice tracts.

The other lender is a *sowcar* not directly connected with village ownership. At most places he is resident in the village; at others he may be itinerant. This class of small village moneylender usually relies on one of the bigger professional lenders for the capital with which he makes his petty loans.

In some areas the malguzar does the seed lending while the village *sowcar* provides the money loans. At others the malguzar combines both functions. At others, again, the cultivator depends on the *sowcar* for both his seed and other requirements.

In Chhattisgarh and in parts of the wheat tract, the landlords and big tenants do most of the lending, while in the Wainganga tract lending is partly in the hands of landlords and partly in the hands of substantial moneylenders. In Berar the moneylender is the source of capital. In the plateau uplands the small *sowcar* is the chief moneylender. In the more backward or roadless districts, the travelling dealer is the source of loans.

Mixed up with lending there is also a good deal of trading. These *sowcars* do a regular business with all but the very substantial tenants. The average

and smaller cultivator maintains a running account with the *sowcar*, disposing of all his produce but repaying advances in order to secure future ones. In many areas, a *sowcar* of one type or another is the village banker and the village trader.

48. *Other sources of financial help.*—Brokers attached to big markets not infrequently make advances to cultivators on the understanding that the borrowers sell all their produce through them in the established markets. Such loans are generally covered by some security, such as land, ornaments or a money bond. In some districts, the owners of ginning factories, who are buyers of cotton, advance money for cotton cultivation on much the same terms as brokers. Again petty dealers, moving from village to village, buy crops in advance and at the time of doing so make advances which are utilised for cultivation.

49. *Types of loan.*—Grain for seed is nearly all advanced by either the malguzar or the *sowcar*, on condition that, after harvest, the seed is returned with the addition of from 25 per cent to 50 per cent of the amount lent. Usually *sawai barhi* or 25 per cent is the commonest interest; but 50 per cent is at times charged in the first instance on a loan of this kind. The terms on a six-month loan look high, but when the difference in seed value at sowing and harvest is considered together with the risk, it is not unfair.

Cash loans take a number of different forms and earn very varying interests.

In the case of small loans—

(1) Interest may be charged at 1 to 1½ annas per rupee per mensem or at 18 to 36 per cent per annum.

(2) A cultivator may borrow on *sawai* taking Rs. 100 in June and giving his bond for Rs. 125 payable in December. If not paid, Rs. 125 becomes subject to compound interest at 25 per cent.

(3) Another system is known as *khat*, whereby the borrower, desiring Rs. 100, executes a bond for Rs. 125 and agrees to repay at the rate of Rs. 5 per month. Before he gets the money, however, he has to pay the first instalment, together with one gratuity of Rs. 5 to the lender's agent and another of Rs. 2 to the bond writer. He thus gets Rs. 88 but has to repay Rs. 120.

(4) Another system is known as *whar*. A loan of Rs. 50 is taken on an agreement to pay a rupee a week for 62½ weeks. The first seven instalments are deducted before any of the loan is paid and a further 6 per cent of the whole loan for various charges. So the borrower gets actually Rs. 40. The money is thus borrowed at 45 per cent interest.

(5) At one time advances against the cotton crop were common but they are nowadays rare. The general method in the cotton country is a cash loan at the beginning of the season at 25 per cent interest payable at harvest.

On bigger loans of Rs. 1,000 or more the security is on land mortgage and interest will range from as low as 12 per cent according to the security offered.

50. *Effects of the system of finance.*—It is difficult to give a clear estimate of the losses which the agriculturist suffers through these methods, but there is no doubt that they often lead to very serious indebtedness, as, for example, one can learn from a study of the conditions which prevailed in the wheat tract subsequent to 1900, when the average debt all over the Hoshangabad district was fifteen times the rent. This, at 24 per cent interest, meant an annual charge of four times the rent.

Sowcars do not encourage borrowers to clear off their advances nor are the borrowers eager to do so. The main cause of debt is the great proportion of such advances which are utilised unproductively. A loan doubles itself in three years under the ordinary compound interest charged and trebles itself in five years. The result very often is the attachment of the whole of the borrower's moveable property except his working capital—in the shape of his bullocks, implements and house furniture. Once a suit is filed the borrower has little chance of getting free. In Bombay under the operation of the Deccan Agriculturists' Relief Act, no more than double the loan can be claimed and repayment can be made in instalments at the discretion of the court. In this Province, there is no limit to the total recoverable and the decision as to payment in instalments rests with the creditor.

51. *Taccavi.*—*Taccavi* loans are advanced by Government to cultivators for seed under the Agriculturists' Loans Act and for improvements under the Land Improvement Loans Act. The rate of interest is 1 anna 3 pies per rupee per annum or 7¼ per cent. Though *taccavi* loans can be given for the objects named, their primary function is for the relief of distress and it is in times of crop failure that they are most resorted to. They are intended to supplement and not to supplant the usual sources of credit. The amount of *taccavi* advanced in the crop failures of 1918 and 1920, was Rs. 81,42,297 and Rs. 1,06,00,108, respectively. In 1924-25, which was a normal year, it amounted to Rs. 5,69,424 only. Since 1918, a certain amount of *taccavi* has been placed at the disposal of the Agricultural Department. The figures below show the amounts so utilised for the last few years:—

		Rs.	
1924-25	...	... 72,000	
1925-26	...	... 81,500	
1926-27	..	.. 93,000	(provision.)

The amount is only a microscopic fraction of the financial need. It is used by the department to supply implements, machines, manures and seed to cultivators Cash is rarely given. The implement or manure is supplied to the value of the loan taken This does away with the temptation to use the money for other purposes. It has been of very considerable value in permitting the spread and use of machinery and the introduction of cake and fertilisers in cane cultivation. Its value for seed supplies is a little more doubtful, as seed is comparatively easily sold and there is not the guarantee that the seed made over to the cultivator by the Government farm under *taccavi* is always actually sown.

Taccavi is unpopular with the malguzars and *sowcars* as it interferes with his grain business, nor is it as popular with the cultivator as it might be, because it is usually given for a specific purpose, whereas the *sowcar* can be relied on to make a loan for any purpose, productive or otherwise. To take a *taccavi* loan may thus jeopardise the chances of a loan from the *sowcar*, specially if taken for grain Another point which tells against its wider use is the fear of not being able to meet payment and the strictness with which payment is enforced.

* * * *

CHAPTER IX.—The Relationship of Forestry to Agriculture.

* * * *

64. *Experiments in the supply of baled grass for stall feeding.*—As a result of a conference held in 1909, experiments were undertaken for the supply of baled grass from various forest divisions to encourage the stall feeding of cattle by the local agricultural population, but practically no success was attained and often the baled grass that had been stored had to be written off in succeeding years, or disposed of at a loss.

In Damoh, 195 bales, weighing 71 tons, of selected grass were offered for sale at cost price. Of this quantity, only 4½ tons were sold to agriculturists and 62½ tons to other purchasers. In Saugor, 403 bales were prepared and offered for sale at annas 12 per bale. Only 153 bales were sold although the price was lowered to annas 6 per bale, and 250 bales remained unsold and had to be written off. Similar losses were incurred in Nimar, Akola and elsewhere, but the results in North Chanda, Nagpur-Wardha and Yeotmal were more promising, though the largest sales were made in the towns and not to agriculturists.

65. *Fodder and thatching grass.*—By the sale of grass in closed coupes and in grass *bits*, Government does all in its power to encourage stall feeding and thus to diminish the damage done to the forest by the grazing of excessive herds of cattle. Unfortunately, except in a few districts of the Province, *e.g.*, Nimar, stall feeding is little practised with the result that in most divisions the sale of fodder grass is very small. On the other hand, there is a heavy demand for thatching grass which is mostly cut and removed after it has become unfit for fodder. To try and stimulate the demand for fodder grass, lower rates are charged for grass cut up to the end of December, but this concession has little or no effect on sales.

As a result of recent investigations as to the best agency for the sale of grass in closed coupes so as to ensure the supply of cheap grass to cultivators, Government decided that no hard and fast rules could be laid down

for the Province as a whole. In many areas, the purchasers prefer to buy grass ready cut by contractors even in divisions where equally conveniently situated coupes are set apart for the sale of grass at lower rates on the licence system. In some divisions, on the other hand, purchasers prefer to cut the grass themselves. Accordingly the use of both the licence and the auction systems is permitted. The Divisional Forest Officer discusses with the Deputy Commissioner the arrangements proposed before grass in closed coupes is auctioned, the general wishes of the local population being duly considered.

66. *The supply of fuel and other produce to cultivators.*—A few prescribed villages, usually such as form enclaves within Government forest, or are situated in districts where the demand on the forests is almost wholly confined to the demands of the village, are permitted to commute on payment of a fixed sum every year by each household in the village for the privilege of removing from the forest, at any time during the year and as often as is necessary, certain stated descriptions of produce such as dry fuel, bamboos, grass, thorns, leaves and fibres, all edible roots, fruits, flowers and gums for *bona fide* home consumption and not for barter or sale or wasteful use. The commutation system is only suitable where there is little commercial demand for forest produce; elsewhere, such a system is liable to abuse

But the more general method of sale of these products to cultivators is by the licence system, *i.e.*, a licence is purchased which entitles the purchaser to remove the specified produce from the forest. Special low rates are fixed for each district for such produce as is taken by *bona fide* agriculturists. Dry firewood is generally taken from any area most suitable to the purchaser, while timber and larger quantities of fuel are purchased at somewhat higher rates in the annual coupes under working These coupes are usually auctioned to contractors who fell the produce and sell to purchasers, but the system of departmental working of coupes is now becoming more widely adopted. The latter system ensures the proper sylvicultural working of coupes, it gives a larger revenue to the Forest Department by eliminating the middleman's profits and by decreasing the possibility of illicit fellings, and it provides a salutary check on the rates at which produce is sold to cultivators.

67. *Encouragement of the use of firewood as fuel in place of cowdung.*—In the Chhattisgarh plain, attempts have been made to encourage the use of firewood as fuel as opposed to cowdung by the establishment of fuel depôts at suitable agricultural centres. The experiment has unfortunately not proved a success and it has been found necessary to shut down two out of four depôts after incurring a heavy loss The resolution of Government on the Forest Administration Report for 1918-19 may be quoted in this connection:—

> "It must be admitted that the results so far have not been encouraging, and they afford a curious comment on the allegation sometimes made that the burning of cowdung as fuel is entirely necessitated by the lack of firewood. If the people of the Raipur district continue to burn cowdung, with 160,000 cubic feet of firewood stacked almost at their doors and offered to them at very cheap rates, immemorial custom and a preference for cowdung fuel must be assigned as the reasons for the continuance of the practice, rather than the scarcity of wood fuel."

* * * *

CHAPTER XI.—The Agricultural Department.

* * * *

86. *Distribution of work*—The work carried on by the research officers and their staffs is sufficiently indicated by their titles. Each, except the Cotton Botanist, is concerned with the teaching work in his own subject. The second Botanist has been very recently appointed. His work will be concerned with College teaching and research on pulse crops, local wheats, fodders and grasses. The Cotton Botanist and his staff are principally engaged in the breeding work related to this crop, but in addition are interested in the millets, in particular *juar*. This officer also controls the main cotton farm at Akola.

The Deputy Directors of Agriculture are in the first place concerned with the work in progress on their experimental farms, the testing of varieties of improved strains of seed, of different manures and methods of cultivation and of implements. They are responsible for the reliability of the experiments and the correctness of the conclusions drawn therefrom. They have, in addition,

a very large amount of executive work and supervision concerned with the organisation and carrying out of the methods adopted to carry o the extension work in their circles, the development of pure seed supplies, improved technique and the expansion of the use of better implements.

At present each circle is divided into two sub-circles, each consisting of two or three districts. These are the charges of the Exrta-Assistant Directors. Their work is concerned with the extension, primarily the organisation of demonstration work in their circles. They are in charge of Government seed and demonstration farms. They co operate with the district authorities in organising agricultural associations and attending their meetings, and with the co-operative movement in organising seed unions. They have to be sound, practical, tactful and helpful men. They are a valuable link between the expert and the farmer.

They are in turn helped by agricultural assistants. Some of these assistants are superintendents and overseers on Government farms: others work in the College. The majority are associated with extension work under the Extra-Assistant Directors, carrying out the scheme of work organised for each assistant's circle. At present, there are only about two men per district and an assistant's charge may include 400 to 500 villages. To facilitate work each assistant has two or more *kamdars*. This useful body, many of them extremely capable practical men in the restricted lines of work for which they have been trained on Government farms, are utilised partly in charge of demonstration plots and partly in carrying out at the assistant's direction practical demonstrations from village to village in new methods of cultivation or in the working and use of new implements.

87. *Methods of extension.*—The three great lines of improvement in agricultural extension are better seed, which implies purer seed and heavier yielding seed of better quality, better tillage methods, and better implements.

The discoveries of the laboratory and the breeding station, adapted to the needs of the cultivators on the experimental farm, are handed on to the grower partly by departmental efforts and partly by the use of private agencies. Those contributed by the department are as follows —

(1) Agricultural shows at farms or fairs.
(2) Seed and demonstration farms
(3) Establishment and management of seed stores and implement depôts.
(4) Demonstration plots for definite purposes.
(5) Smaller practical demonstrations from village to village, carried on by agricultural assistants and their *kamdars*. Such demonstrations may include (*a*) the growth of a new type of seed as against an existing type on a cultivator's plot, (*b*) the carrying out of some new form of agricultural practice, as the single plantation of paddy seedlings or line sowing in area given to broadcasting, (*c*) the use and handling of ploughs or the construction of a sugar boiling furnace and the like, (*d*) the treatment of seed. During the past year 2,384 practical demonstrations of this kind were given in the villages of this Province.
(6) The distribution of pamphlets, bulletins and the giving of lantern lectures. During the year as many as 4,743 bulletins were distributed or sold and 61 lectures given.

These methods are not however in themselves sufficient, either to extend use of pure seed and implements or to enable the department to get into touch with the bigger landowners.

88. *Seed agencies.*—With regard to the first, the seed grown on the Government farms does not go to the market nor is it sold to any buyer. It now goes out to a large body of certified *pure seed growing farmers* who in their turn multiply the seed and sell it to the grower. During the past year, there were no less than 2,473 wheat seed farms, 931 paddy seed farms, 1,536 cotton seed farms, 280 *juar* grain and 956 ground-nut seed farms working in concert with the department in this extremely important type of work. In several cases in the north of the Province, tahsil and circle associations took an interest in providing seed to their members.

In the present year, the department is engaging in a big scheme, utilising a *taccavi* seed loan to the value of one lakh so as to finance these associations. The associations will get their seed from approved seed farmers to the amount of the loan taken up on joint security. They will lend out the seed to the members of the association on 20 per cent interest, *i.e.*, on the

return of the lent seed stock and 20 per cent added at harvest. After harvest the associations will pay 10 per cent of the loan *plus* 10 per cent interest in kind to Government. The seed returned less that needed to pay interest will be lent on the same terms next year. It is hoped that after ten years, the associations will not only be able to repay the capital and be in possession of seed stock equal to the value of the original loan, but will have in addition reserve funds for other forms of agricultural improvement. Co-operative societies in the wheat tract also deal in seed. The pure seed owned by sixty-five societies forming one union was 600,000 lbs. this year, sufficient to sow an area of 6,000 acres.

Somewhat similar unions of seed farmers were at one time fairly common in the cotton tract. A central seed farm received its seed from the Government farm and grew it. After ginning, this seed was taken by a group of farmers round the central farm and sown next year on their land. The union seed was then ginned and went on to the general seed market. This sound organisation is however not as prevalent in the cotton tract as it used to be and, though single seed farms have increased, unions have tended to decline. The Co-operative Department works in close touch with the Agricultural Department in the organisation of these seed agencies and unions, many of which are registered under the Co-operative Societies Act and are under the financial guidance of the Registrar of Co-operative Societies.

89. *Agricultural associations.*—District, tahsil and circle agricultural associations are the chief means adopted for getting the bigger farmers interested in agricultural work and in securing their active co-operation. These associations vary very greatly in activity, some being very progressive, others almost moribund.

Originally they were formed by the rather haphazard selection of the bigger men without very close regard to their interest in agriculture. Experience has shown that associations of this kind to be successful (1) must consist of practical agriculturists, (2) should be associated with an area connected with one or two definite problems, (3) must lend itself to the technical guidance of the department. The district associations were first formed, then the tahsil. The circle associations are more recent. It has been found that on the whole, though a district association here and there may be active, tahsil associations are more effective than district ones and circle associations than tahsil. The tendency now is to develop the smaller unit, with the intention of building up the tahsil association by election or representatives from the circles and the district associations in like manner from the tahsil associations. This will take some time. Meanwhile, it must be acknowledged that very good work is done by many such associations. Seed expansion, as outlined above, is one, development of implement stores which is mostly in evidence in Berar is another; general interest in the work of the local demonstration farm, assistance in organising the programme of village demonstrations and active private use and demonstration of departmental suggestions in their own villages are others.

The time may be looked forward to when each agricultural association will have its own demonstration plot, as several have. On these will be shown by the agricultural assistant the improved methods to be introduced which the members will undertake to incorporate in their own activities. Such associations will get capital by selling seed, implements and manures and arranging for the marketing of members' crops.

An active development of such associations would go far to reduce the labour of the department and to hasten the spread of a better general standard of agriculture. Recent reports go to show that a much wider interest is being taken in the activities of the department with each successive year. There is a very wide gulf fixed between the conditions in 1906 and those of 1926.

CHAPTER XII.—Research and Investigation.

90. *Botanical research.*—The early work of the section was necessarily of a preliminary character. A considerable amount of valuable systematic work was done and a herbarium started which now contains over 3,000 specimens. Careful botanical studies were made of the rices and *juars* of the Province.

With the opening of the laboratories in 1915, a more active advance became possible with regard to economic research. Several rices were issued after selection. A certain amount of attention was given to cotton as regards quality, length and strength of staple, but it was not till 1921 that the botanical section took over this work seriously. The early attempts to improve local

cottons were controlled by the Deputy Director of Agriculture of the southern circle. The pollinisation and cross fertilisation of *juars* received attention. During the War, the Botanist went on service and work passed from an active to a more or less dormant condition, though selection was continued in various species and gram in particular was improved. At the close of the War, plant breeding work again became active. Ground-nut, *juar* and cotton received increased attention. In both the former valuable strains have been isolated. In November 1923, the Botanist, assisted by the funds of the Indian Central Cotton Committee, began to concentrate very closely on cotton and since that date much valuable work has been done on this crop. Strains of local types have been isolated which are high yielding, good in staple and wilt resistant, and have been grown this year on a field scale with most promising results. Hybridisation has been active. Several long staple strains of promise are fixed. A second Botanist was appointed in 1925. He has taken over the organisation of the teaching work and the research work relating to the breeding of local wheats and the pulse crops and will investigate the fodder and grass problems of the Province.

91. *Roseum cotton.*—In addition to the plant improvement work under the botanical staff, a great deal of variety testing and selection and hybridisation has been carried on by Deputy Directors on their experimental farms and most of the improved crops now in general use have come from work of this kind The investigation of cotton was taken up by Dr. Clouston shortly after his arrival in India and the common mixture of cottons known as *jari* was isolated into the six common types prevalent. The testing of these resulted in the separation of *roseum*, which today provides the seed for half a million and more acres in the cotton tract. Roseum may be the subject of much hostile criticism at the present day, but the fact remains that it is still the most paying cotton which the cultivator, whose land is free of wilt, can grow and its introduction has during the last 15 years brought many crores of increased profit to the grower.

Today a cotton of finer quality which will pay the grower is required. During the War, the Indian mills began to concentrate to a greater extent on better quality. But at this period the department had no botanist and hybridisation requires very close and expert personal attention. The close research work going on today should have come into being some ten years ago and would have but for the breakdown caused by the War. The defect is being made good and when staple, as compared with ginning percentage, comes into its own, types to meet it will be there *Roseum*, having right well served its day and generation, may then be replaced.

92. *Improvement of juar, paddy and wheat.*—Another of these earlier samples of selection is found in *juars*, two varieties of which, selected very early in the history of the department, still stand out as the best in common use on the fields of the many cultivators to whom they have been introduced.

Paddy has been improved and the chief varieties issued by the department and grown on its seed farms, originate from farm tests and selections. Wheat, particularly that of the north of the Province and the plateau, is indebted for the new varieties, some selections from local wheats, or imported mixtures, and some the outcome of hybridisation, which now cover thousands of acres in these areas, to the breeding work at Powarkhera. At Adhartal, wheat breeding of intensive character is going on. Rust resistant and higher yielding types of even better quality have been bred which in their turn will one day replace those which now hold the field.

93. *Sugarcane.*—Sugarcane is another example of a crop which has been improved almost entirely by work on Government farms. In this case it has been case of testing varieties from different areas from outside the Central Provinces. As a result the department has been, for some years past, offering distinctly better yielding types of thin and thick canes. Of late years, the products of the Coimbatore Breeding Station have been under close comparative tests on different farms in the Province and there is no doubt that the present varieties in no short time will give way entirely to these new products of careful scientific work.

94. *General progress.*—It may be said that, perhaps with the exception of the lesser millets and some of the lesser grown oil-seeds and pulses, the department is in a position at the present day to provide the grower with higher yielding and higher quality and better suited varieties of nearly every crop commonly grown.

* * * *

MR. F. J. PLYMEN.

98. *Engineering and machinery improvement.*—When the large areas growing similar crops and owned by many small holders are considered, the difficulty of effectively putting into practice methods applicable to staple crops can be realised. At the present time it is a question of collecting data rather than a matter of effecting immediate improvement. This takes two forms:—

(*a*) the purchase and trial of existing implements and machinery and the testing of their suitability to local soils and economic needs;

(*b*) the designing of implements based on either western or Indian models. The aim in the former type is simplification without sacrifice of efficiency and in the latter improvement of the local implement.

In the early stages of development the first of these received a great deal of attention on Government farms. It is still carried out but possibly more with the expectation of adaptation than of direct introduction.

Designing and simplification for local manufacture and use were also taken up in the earlier days of development but have been much more to the front since the appointment of an Agricultural Engineer on the staff in 1920. In the earlier stages, ploughs were the implements which received the most attention. As a result of these direct trials, in some instances assisted by alterations incorporated into models by the makers after consultation with local officers, it has been possible to lay down for different soil conditions and economic requirements the correct type of plough for the varying local needs. Thus the cotton, wheat and rice tracts have each their specific type or types of plough suitable for the conditions of each area. Two other problems which received early attention on Government farms were hoeing and winnowing, for both of which implements were designed, which have been in steadily increasing demand for many years and are both manufactured locally for their respective markets.

Several other simpler machines adapted or designed by the Agricultural Engineer are in use and are being made either at his shops or by Indian manufacturing firms to his designs.

99. *Problem of improving implements.*—Implement improvement is not by any means a simple matter. Very few of the implements or machines to be seen today on a western show yard are of much use to the Indian farmer as they stand. The greatest problem is the small cultivator. Apart from the need for low first cost, simplicity and strength in the tool advocated, it must be remembered that, even if he can secure the capital, the area of his farm reduces the effective duty of an implement and thus handicaps its economic introduction. He is accustomed to a general purpose implement. Most of western tillage machinery is specialised and on this account, even if capable of easier and better work, is less adapted to his limited needs. The smaller cultivator is restricted to implements which cost little and of which the primary function is the direct improvement of the outturn of saleable material. On the farms of bigger men, labour and time saving machinery is growing in importance, for here the implements designed to suit western conditions have a greater chance. But in these cases though a certain degree of specialisation might have its advantages, greater simplicity of design than that common in modern implements is still essential, as neither they nor their labour have been brought up to understand the working of and care needed by modern machinery. Modern aids to easier handling, which are the chief feature of the later models, tend to raise the cost and to increase the chance of damage. Neither at the present juncture is suited to Indian conditions. The rapid increase in the sale of ploughs during the last four or five years is the outcome of, among other factors, the manufacture in India of simple models, built on western lines including the main essentials rather than the later additions. These Provinces have a considerable number of bigger farmers and landlords, the size of whose farms permits the employment of implements and machines suited to enterprise on a large scale. The fact that there are 26 tractor outfits owned privately indicates this. The department has had both classes of demand in view. Though simplification and improvement will continue, experimental work, ranging from investigation into tractors and their outfits and oil-engines and their stationary plants to the simplest of ploughs and hand tools, has provided the department with the means of supplying immediate needs and the wherewithal to advise and offer implements suited to such needs as may arise. The department, as a result of such investigation, has met the immediate demand for ploughs of various types, hoes, simple cultivating implements, fodder-cutters, winnowers, cane-mills, sugar boiling furnaces, simple threshing implements, oil-engines, water lifts of different patterns

and tractor outfits. It is also in a position to supply when the demand arises, such implements as automatic seed drills, small power threshers, reaping machines and larger scale tillage implements.

* * * *

CHAPTER XIII.—Extension.

107. *Utilisation of the department's work by the cultivator.*—This is seen in one of three forms—

(*a*) the inclusion of results arrived at on experimental farms in local agricultural practice and changes in technique which have been or are being effectively introduced;

(*b*) the expansion of the areas under improved strains and new crops;

(*c*) the expansion of the use of more effective implements and machines.

108. *Changes in technique*.—Improvements in technique are brought home to the cultivator partly by observation of the work in progress on a seed and demonstration farm but chiefly by the aid of the small demonstration plots, opened to emphasise and illustrate new processes, and by actual demonstration by assistants and *kamdars* in the villages. Over 2,400 such demonstrations were given during the past year.

(*a*) *Tillage*.—Better cultivation in all tracts has followed on the extension of the use of the inversion plough. In the cotton and wheat tract, its value in cleaning the land and in the removal of the deeper rooted weeds is widely recognised and comparatively small men come forward to hire the use of a tractor for this purpose when unable to do the work with their own bullocks. Ploughing in Berar a dozen years ago was a matter of rare occurrence. At the present day it may be said to be almost becoming general.

(*b*) *Planting*.—One of the earliest improvement in cultivation which was demonstrated in the more backward rice tract was the transplanting instead of the broadcasting of rice, and its subsequent cross ploughing termed *bias*. The campaign was opened in 1906-07 when 20 acres were thus planted. By very steady efforts the area was by 1918-19 extended to 41,824 acres in Chhattisgarh. The area so treated in this part of the rice tract has, however, decreased since that date to a little over half the figure. The process was proved to be paying, but it had to contend with certain economic conditions, the chief being the extreme sub-division of the majority of the holdings, the general low pressure of population and low standard of living and the fact that the labour demanded for transplanting upset the even distribution of work over the other crops. At the present day, transplantation in this area is to be found in those places where population is denser and there is a greater tendency to consolidation.

In connection with this process of transplantation, the department advocated the use of single or double seedlings instead of bunches of 8 to 10 seedlings. In the Wainganga area of the rice tract, where the pressure of population is higher, transplantation as opposed to broadcasting has been common for many years, but was done in bunches. In this area, the use of single seedlings with its attendant saving of 60 lbs. seed per acre and its higher outturn is rapidly replacing the old bunch method. It will not be many years before the old method of planting is entirely superseded. In the north where labour difficulties check transplantation, the drilling of seed is being introduced.

Another direction of improvement is seen in the north of the Province. Up to a few years ago it was the almost universal practice to broadcast the seed of all crops (such as cotton and *juar*) sown during the monsoon. Demonstrations in line sowing, using the country drills of the south of the Province, have been most effective and a very wide area is now sown by drill. With the use of the drill has followed the introduction of hoeing with bullock hoes.

(*c*) *Plant protection*.—Smut in *juar* is an essential cause of loss. The use of copper sulphate and later of copper carbonate as a preventative has been widely demonstrated and considerable quantities of this seed are now treated before sowing. Between 12,000 to 15,000 acres are estimated to have been protected by copper salts distributed in the past year.

(*d*) *Sugarcane*.—Sugarcane is a crop which has received a good deal of attention. Formerly it was often sown in flat beds, frequently by trampling in

the whole cane. It was generally treated in a very extensive fashion. Demonstration has resulted in almost all the cane being nowadays sown in ridges and furrows and in the use of setts and, where setts were formerly used, the number of these used has been largely reduced. Cane in the past suffered from lack of manure. The department has obtained effective recognition of the value of the growth of *sann* hemp as a preparatory green manure crop and has in other parts succeeded in causing an extensive use of cake or cake with ammonium sulphate, as a substitute for, or an addition to, a limited cattle-dung supply. Associated with this crop may be mentioned the marked economy effected in the boiling of the juice by the wide introduction of a simple furnace, designed in this Province, which is very rapidly replacing the old country form. This furnace costs but Rs. 10 to construct but by its design the whole of the juice of an acre of cane can be boiled down without even the entire utilisation of its own megasse. As in the old type of furnace the grower required to spend something like Rs. 50 on wood fuel per acre of cane, because the whole of his megasse was insufficient, the popularity of the new furnace is easily understood.

109. *Introduction of new crops and pure varieties of seed.*—This is the direction in which improvement has been the greatest, because it affects both rich and poor and is undoubtedly the easiest way of increasing farming profits as it demands but small capital outlay and does not clash with existing labour difficulty or other factors.

The fullest advantage of this improvement, however, cannot be taken without a corresponding rise in the standard of farming in that it is not possible to take off annually higher yields by growing more prolific strains without increasing the loss from the soil Moreover, a higher quality and better strains demand a better standard of tillage and manuring to give the best results Improved technique and improved implements are necessary, if the full value of new crops and, still more so, better types of existing crops, are to yield their full harvests.

110. *Seed multiplication*—The organisation for seed multiplication has already been outlined. The seed is raised on the Government farms and thence, as a rule, passes out to selected seed farmers, whose crops are visited by departmental officers or assistants during the year. Seed distribution from Government farms on any scale began during the years 1912 to 1915 in the different circles. The methods adopted to increase this supply vary. With some seeds, as, for example, cotton, the supply is at certain centres taken up by unions of growers situated in the neighbourhood of a primary private seed farm. In others, it is bought up by seed stores and sold to growers the following year. Another agency is the agricultural associations who, on receiving seed from a seed farm, issue this stock to their members, thus placing a much larger area under the improved staple.

Again, many seed farmers are big men and, following the usual custom of the grain business, lend a fair proportion of their seed to their tenants. Another agency exists in the Northern and Eastern Circles in the form of village unions. There are small village societies of cultivators. Here the ordinary village mixture has been or is being gradually replaced by better staples given by the department in exchange for contributions of ordinary seed stocks brought in by members of the unions.

111. *Difficulty of maintaining pure seed.*—The chief difficulty in the way of establishing new varieties lies in maintaining the seed pure. Really effective departmental control ceases when the seed has been issued from the Government seed farm to the seed farmer. The district staff, though visiting these, can only advise the seed farmer to maintain the purity and can refuse to class a crop as sufficiently pure and suited for sale as such to the several secondary agencies mentioned. Cotton is particularly difficult to keep pure, as cross fertilisation and bullocks fed with mixed seeds from the ginneries tend to cause admixture in the field. The removal of the foreign plants may in extreme cases be an uneconomic proceeding for the grower and as such work demands attention and time, it is not infrequently shirked. Even when the crop is pure off the field, there is always a risk of mixture at the ginneries, unless the grower has his own ginning plant.

In the case of wheat and paddy, there is less danger apart from carelessness on the part of the grower at the time of threshing and this is as far as possible avoided by restriction to one variety on the farm.

112. *Introduction of new types.*—Ground-nut is probably the most important new crop which owes its present position in the Province to the activities of the department. Though fifteen years ago it was practically unknown, yet today it is planted over at least 30,000 acres. It is in Berar a valuable rotational crop with cotton, replacing the less valuable pulses, and adds about Rs. 15 per acre to the net profits of the grower. It has replaced considerable areas of the lesser millets in the plateau tract and it is found in increasing amounts in the Northern and still more so the Eastern Circles where it adds from Rs. 15 to Rs. 30 to profits according to conditions. The spread of this crop would be much more general, were it not particularly susceptible to the ravages of the pig and the jackal The presence of the former pest almost entirely stops advance in certain districts.

Another striking introduction was that of a variety of sesamum, introduced from Nagpur into the Northern Circle some years ago where it has almost replaced the inferior indigenous types and given an additional profit of Rs. 3 an acre.

The introduction of indigenous varieties of sugarcane has had the effect of driving out the older indigenous forms which were common twenty years ago and has materially contributed towards the rise in the acreage of cane from 18,000 acres, to which it had fallen, to the present 30,000 acres. The new canes add from Rs 30 to Rs. 50 per acre to the value of the product.

113 *Improved varieties of ordinary staples*—Of these, some are the products of selections from indigneous types, other selections from varieties of like species from elsewhere in India, while others again are the outcome of hybridisation.

With regard to the chief staples—cotton, wheat and rice—the figures shown below, which are taken from the last annual report, give some idea of the number of seed farms, the amount of seed which the department knows to have been distributed and the acreage growing pure or approximate pure new types. As for cotton, these last two figures are probably fairly correct, but for wheat and paddy, particularly the former, the figures of the acreage under improved seed is certainly very much below what it actually is, as the returns only refer to seed farm areas As a very large proportion of the seed from these areas is utilised as seed through one or other of the secondary agencies already mentioned, the actual acreage under improved seed is probably three to four times the amount definitely known to the department.

——	Wheat.	Rice	Cotton.	Jowar	Ground-nut	Other crops	Total.
Number of private seed farms	2,473	931	1,536	280	956	492	6,668
Quantity of seed distributed (in maunds).	70,008	45,123	51,21[illegible]	3,763	12,944	...	183,086
Approximate area in acres sown with improved seed.	125,138	108,057	511,904	65,080	28,691	2,554	844,424

As an indication of the probable accuracy of these estimates, it may be noted that, in the wheat tract, the sample now being offered in the principal markets is about 90 per cent pure compared with 60 to 65 per cent pure ten years ago. Again, a cross wheat issued to the public only three years ago is in such great demand that it has already acquired a trade name which means that it is coming into the markets in sufficient quantities for commercial purposes and separate shipment. It may be safely stated that the actual area under improved wheats in the Northern Circle and plateau, where the greatest concentration on the crop has taken place, is nearer 400,000 acres and that of paddy in the Province is about 250,000 acres.

114. *Profits for types recommended*—*Roseum* is the principal cotton still grown on the Government seed farms of the cotton tract and on its associated private seed farms. In comparison with the ordinary *jari* mixtures, it brings to the grower an extra profit of from Rs. 7 to Rs. 10 per acre.

Of wheat the department has several types in distribution and growth. Five in common use are direct local selections, four are cross-breds in which yield and rust resistance are the chief characteristics and one has been derived from Pusa. The increased value to the grower of these wheats over the ordinary types is not less than Rs. 5 per acre.

The chief varieties of paddy recommended by the department have for the most part been derived by plant to plant selection from among the best provincial paddies. The increase in yield in paddy by the use of improved seed is about 14 per cent and the grower benefits to about the same extent per acre as in wheat. Seed improvement has undoubtedly added very considerably to the potential wealth of the cultivator. The total value exceeds by many times the total annual cost of the Agricultural Department to Government. Indeed the total net cost of the department for ten years is certainly less than half the gross additional profit which better seed has made possible.

115. *Implement extension.*—The rate of expansion of the use of improved implements has been remarkably rapid since 1920. It would have been greater but for the increase in cost. The expansion has been greatest in ploughs. One of the reasons for this lies in the fact that they are being made in considerable quantities by Indian firms and are put on the market at 80 to 100 per cent less than imported ploughs at a cost closely equivalent to that of the pre-war imported plough.

The following figures illustrate the expansion of this line of development:—

	Average annual sale of implements and spare parts.
	No.
1906—10	352
1912—17 .	2,100
1922—26	10,014

The principal implements in demand during the last season were—

Number of implements and parts of implements sold.

Ploughs.	Cane mills.	Fodder-cutters.	Akola hoes.	Other implements.	Spare parts.	Total number.
4,274	199	31	678	396	4,456	10,034

These figures refer only to sales from farm and association depôts. In addition, several firms have agents in Nagpur and make direct sales to the public.

116. *Agency for supply of implements.*—The original agency, and still one of the principal ones, is the implement depôt on Government farms. Originally there were two. At the present day each experimental and seed farm has its depôt. The working capital involved is Rs. 80,000. Agricultural associations, however, particularly in Berar, have begun to take up the sale and distribution of implements which are in demand. This activity is one of the factors which counts towards the larger number shown as sold in this circle. There are at present 37 shops financed by share capital provided by these agricultural associations in the Western Circle. The total capital thus invested is over Rs. 65,000.

The principle of getting tahsil associations to stock implements is being extended in other areas and will shortly be general in the wheat tract. The popularisation of implements is largely the outcome of village to village demonstration, and is also assisted by organised ploughing matches. In the Western Circle, increasing activity is shown by the large business done by associations in the hiring out of ploughs to smaller men who are unable to buy or whose acreage is too small to permit of economic ownership. During the past year, a thousand ploughs were let out on hire in the Western Circle. Assuming ten acres of work per plough, a reasonable estimate, one finds that 10,000 acres, which would otherwise not have been worked, have been ploughed.

117. *Types of implements sold.*—Ploughs of different kinds are the chief implements sold at present. Sugarcane mills are another type which have established themselves on their merits. The three-roller iron mills extract about 20

per cent more juice than the older country mills which at the present day are rapidly becoming extinct. A sugar mill pays its cost within a couple of years. Three-lined bullock hoes are in steadily increasing demand in the monsoon sown crop areas.

In the wheat tract, winnowers are now so well known as to scarcely need demonstration. A simple aid to the threshing of the crop which reduces the cost on the threshing floor considerably, the "Olpad thresher" is selling in increased numbers.

In addition to agricultural implements there has been a marked change, in the last fifteen years with regard to the utilisation of power plants, whether oil-engines or tractors. As stationary engines, they have been utilised in working small ginning plants and for lifting water. Tractors were first introduced on the College farm in 1919. There are now thirty privately owned and operating in general cultivation. Most of these outfits have been secured on *taccavi* loans.

CHAPTER XIV.—Cattle Improvement.

118. *The need for improved livestock.*—The improvement of cattle must continue to be one of the chief aims of agricultural research, as, for all time, they are likely to be the only important source of agricultural power. The number of cattle in the Province as compared with acres under cultivation was—

	Plough cattle	Acres cultivated.
In 1908-09	4,709,000	28,052,000
In 1924-25	4,425,000	28,114,000

These figures for plough cattle are not entirely reliable, as they include, at any rate in the rice tracts, a large number of entirely worthless stock but are sufficient to illustrate the dependence of the country on the bullock.

It will be noted that the area to be cultivated has risen to a greater extent than the power available. It must also be realised that improvement in tillage processes, such as the extension of the use of inversion ploughs, call for more power than did the older forms of tillage. The expansion of better cultivation is thus dependent on, if not more working animals, at any rate better ones.

The very general complaint of the deterioration in work stock is probably justified. Except in one or two areas, there has never been anything related to breeding. The deterioration is attributed by some to a reduction of the grazing lands owing to expanding cultivation but this is only true in a very small degree. At the present time, the best stock is found where grazing is least and the worst where there is most of it

119. *Distribution per cultivated acre in different tracts.*—The following approximates to the acreage dealt with per pair in different tracts:—

Berar 20, Nerbudda 11, Vindhyns 9
Rice tracts 4 to 5.

In the first named the cattle depend on field grown fodder, the stalks of the *juar* crop, which is stall-fed. Roughly about two acres of *juar* is grown per head of livestock in the cotton tracts. In the last they depend on grazing, assisted by rice straw. In the cotton tract the bullocks are bigger and better, and as compared with the wheat tract the work is lighter. This tract keeps little which is not of active use. On the other hand, in the rice tract free grazing and cheap grass has led to a custom of judging social position by the number of head owned rather than by their individual utility, with the result that the effects of poor environment and bad climatic conditions are intensified by the existence of herds out of all proportion to the amount of grass available or the needs of cultivation, if measured in capable, even if small, animals. In Chhattisgarh, the herds kept are an actual source of economic loss, instead of, as they might well be, village assets. Many villages with large herds actually buy a very considerable number of their plough cattle from outside the village. These herds exist chiefly as providers of fuel.

Apart from the need to improve stock by breeding, the need for an improvement in the feeding of the animal is obvious, as it is only by making the best use of resources in this that any effective or lasting value in breeding can be expected. Hence the problem is twofold, to improve the type of animal and to induce the cultivator to feed it better.

120. *Cattle-breeding—early developments.*—The first breeding operations in the Provinces began at Nagpur in 1901 with the establishment of a herd of Gaolao cattle. This was followed in 1905 by the opening of a cattle-breeding farm attached to the Government farm at Powarkhera (Northern Circle). The herd established was the Malvis from Central India. Subsequently three small herds of local animals were started in the rice and cotton tracts. The College Dairy herd was started in 1913. Dairying began at Telinkheri about the same time, but there was no real breeding for higher milk production till 1919, when the first steps to establish a pure herd of Sahiwal were taken. The early progress in cattle improvement was not striking. The herds were in charge of Deputy Directors already overburdened with the demands of big circles and unable to give that close attention which breeding work demands.

121. *Present day conditions.*—At the present day, there are nine cattle-breeding farms. In addition to these there are two dairy farms, both at Nagpur.

Prior to 1923, each Deputy Director was in charge of the cattle-breeding farms in his own circle and these farms with one exception were attached to either a seed and demonstration or an experimental farm. These farms carried breeding herds varying from 60 to 100 head of cows; the breeding herd was kept with the object of producing pure bred bulls of the chief breed in the district.

From 1923 a whole-time officer was put in charge of cattle-breeding operations; and at present two farms are under his direct control. The other farms he visits twice or thrice a year for the purposes of classification of cattle; he advises the Deputy Director of Agriculture as to which animals should be sold off and as to scales of feeding, etc. In nearly every case it has been found that the herds maintained on these farms were far too large for the grazing area available and the allotments for maintenance. Many of the cows were suffering from old age and inbreeding, owing to the impossibility, in certain cases, of getting a change of blood by purchasing pure bred bulls in districts where nearly all the cattle were very mixed.

With the exception of the three cattle-breeding farms in the Eastern Circle and one in the Northern Circle (at which pure bred Malvis are reared), all the cows on the other cattle-breeding farms have been crossed with Sahiwal bulls with the intention of further grading. All herds have been reduced to not more than 30 breeding cows and no cow is kept over the age of ten years.

122. *The Garhi farm.*—Garhi is the only one cattle-breeding farm capable of carrying more than 30 head of breeding stock. This farm now carries 60 breeding cows of the Gaolao breed, the only really definite breed of value native to the Province, and this number can be increased to 80 in the near future but that will represent the maximum possible. The young bulls from this herd are pure bred Gaolao and are sold at the age of two and a half years. For animals of this breed there is a keen demand and they fetch an average price of Rs. 250 to Rs. 300 per head.

123. *The Telinkheri farm.*—On the dairy farm at Telinkheri there was in 1919 a herd of twenty-one cows of various breeds which gave a total of 14,000 lbs. of milk per annum. Since that date steps have been taken to create a herd of pure bred Sahiwal (Montgomery) cows, which now number twenty-six animals in milk and give a total of 60,000 lbs. per annum.

124. *Difficulties for the Eastern Circle.*—In the Eastern Circle the cattle-breeding problem is one of considerable difficulty. The climatic conditions are unfavourable, the country grows nothing but rice, the people are poor and the native cattle are small and for the most part of inferior quality. Here on the cattle-breeding farms the local Chhattisgarhi cow has been crossed with the Malvi. The resulting first cross was an improvement on the local cattle as regards size and bone, but the country is too poor to maintain a big animal such as would result from further use of Malvi blood and it is noticed that in the second generation these crosses if inbred are no bigger than the original Chhattisgarhi animal.

125. *Need for extension.*—The total number of breeding bulls of all kinds which the department can now issue from all its farms does not, on an average, exceed 40 per annum. This is not a sufficient number to make any appreciable progress in the near future; it is, moreover, highly undesirable to issue cross-bred bulls as at present produced at most stations, even though these are an improvement on the local animal.

The stage has not yet been reached of producing a dual purpose breed which will meet rural needs and which will breed true, although experiments in this direction are being continued. The use of the Sahiwal in grading up in the Western Circle farms, though likely to provide a better milking female, will probably not create the active powerful bullock demanded by the local needs of this tract.

126. *Extension scheme proposed*.—To meet this need for extension, a scheme is under consideration for the transference or extension of the present breeding farms to larger areas, for the provision of two forest areas which will support a large size herd of selected local cows to be graded up by the use of pure bred bulls, and for the conversion of the present small area farms into local sale depôts. Concentration on a special breed is proposed in each area. In addition the pure bred herd of Sahiwal will be developed at the Telinkheri Diary farm and will provide bulls for use in urban and semi-urban areas in the improvement of the milk supply. The small herds, at Adhartal in the north and at the College Dairy farm, where experiments, at the first named in crossing the Malvi and Sahiwal and at the latter in blending Ayrshire with Indian blood are in progress, will be continued, as at each place an attempt is being made to create dual purpose breeds suited to local needs.

The development of this scheme is dependent on obtaining forest areas which should be a matter of no difficulty and on a more liberal budget allotment for cattle-breeding than now exists. Till the stock on the proposed large scale grade breeding areas reaches a sufficient standard of purity, the males will go on to the market as bullocks and the bulls from the pure bred herds will be utilised for meeting the demands of the existing premium bull scheme. When a condition of sufficient purity is reached in the grade herds, it will then be possible to concentrate on the improvement of the village cattle population, area by area, as is now done in the Punjab. When this stage is reached, it should be possible to put out 300 bulls per annum.

127. *The fodder problems*.—The fodder problem is almost more difficult than the breeding one. A number of possible fodder crops have been tried on Government farms but without very marked success except in the case of *berseem*, the use of which is restricted to irrigated areas, and some varieties of *sorghums*. Investigations are, however, still in progress. The use of fodder cutters in the *juar* growing tracts as a means of making a better use of these supplies has been advocated and their use is extending. Attempts are being made to encourage the preservation of monsoon fodders in the form of ensilage; but a good deal of work has yet to be done before this will be adopted. Practically all the straws of arable seed grown crops are consumed by stock. There is no waste in this respect. Though the growth of special fodder crops is advocated, economic conditions, such as the size of the holdings, absence of fence protection, the comparatively recent rise in the value of cattle and the belief in grazing tend to react against such means of stock betterment.

Experimental work has been started on the improvement of grass lands but they still are in their infancy. It has been proved that even spear grass, if taken early enough, provides quite a good hay. The difficulty, however, in cutting this and other grasses, at a time when their feeding value would be best, lies in the fact that this season coincides with that in which there is the greatest demand for labour on arable land.

The cattle of villages near the forests and those owned by large malguzars or professional breeders and *ghi* sellers largely rely on forest grazing. In some areas, the villagers cut and stack their grass. But, except in a few districts, the forests are not scattered about in blocks among the cultivated areas and this makes cutting, storing and carting difficult.

128. *Suggestions for improvement*.—The only general means in the future of increasing the fodder supplies are—

(1) the encouragement of stall feeding and the extension of heavy producing fodder like the *sorghums* into areas where they can be grown,
(2) the extension of irrigated fodders in the rice tracts, largely dependent on the facilities which the Irrigation Department can provide,
(3) development of the baling of hay, cut in forest areas, and its transport,
(4) in certain areas, a reduction of locally worthless animals which consume the limited supplies available.

* * * *

CHAPTER XVI.—Agricultural Education.

* * * *

138. *Outlines of the degree course.*—The College degree course opens with agriculture, survey, mathematics and English. Agriculture deals in its early stages with elementary agriculture, geology and climatology, soils, the principles of tillage and manuring, the technical handling of the main farm crops from seedling to harvest, and a study of the simpler implements. Practical agriculture is directed to the above and extends to about ten hours per week. The first elements of chemistry and botany are introduced towards the end of the year.

In the second year, agriculture includes a detailed study of farm and garden crops, the elements of animal husbandry and dairying and farm accounts and further studies of machinery The time given to mathematics and survey is slightly reduced and the time given to chemistry and botany increased.

The second year practical agriculture, apart from the time given to agricultural engineering, takes up about ten and a half hours per week in three periods. The class is in three sections which are engaged in turn on field crops, garden crops and irrigation work and animal husbandry. These students work a farm of their own of about 10—12 acres on which they grow the local field crops on commercial lines. Work is done co-operatively under the supervision of an assistant The land, implements and bullocks are supplied by the Principal as landlord. The class undertakes to make certain returns of fodder crop and to carry out land improvement in lieu of rent. The area has a fixed cropping scheme, a predominant main crop supported by subsidiary crops Cultivation records and accounts are kept by the class. The field work is done by them and they take the profits. In favourable years, as much as Rs. 470 have been received.

In the third and fourth years, mathematics and English are discontinued. Agriculture takes on a strong economic bias, with advanced studies in tillage, manuring, irrigation and animal husbandry and agricultural engineering. The time given to botany and chemistry is maintained and veterinary science and entomology are introduced Practical agriculture, though keeping a student in touch with technique, is directed chiefly to management. In addition, the third year is trained in field experimental work and the students of the fourth year are each allotted a simple subject for investigation on which they produce a thesis at the end of the year.

The two-year course, neglecting direct science, as such, with the exception of a short course on farm pests, follows, on the whole, lines of the first two years of degree course. The students take, in addition to the subjects mentioned in the first year of this course, first aid and practical carpentry and blacksmithy. They have more time for practical agriculture.

139. *Objects of the courses.*—These courses have been designed to meet the needs of three groups, who may rightly be expected to come to an Agricultural College:—

(1) the sons of landowners, whose chief function should be the control of their estate,
(2) would-be teachers, investigators or Government officials associated with the land,
(3) the two-year course—the sons of the better class cultivators whose earlier education has not attained to matriculation standard.

140. *The utilisation of training.*—The Agricultural Department recruits men for its upper subordinate service from the degree course men and for its lower subordinate from the two-year certificated men. In cases where advanced specialised study is necessary, graduates can and do proceed to Pusa or Bangalore for post-graduate work. Practically all the men employed in the department have been through the College. A number of men trained at this College are employed, under Government, in agricultural work in other parts of India. Others are private estate managers.

141. *Expectations from affiliation.*—The number who have gone back to manage their own land is not as great as could be wished, though they are by no means lacking. It is believed that affiliation to the University will tend to strengthen the number who take agriculture for this last purpose. The social status conferred by the degree of a University is greater than that attained by the

licentiate of an unattached college. Arts and law have not infrequently been taken by the sons of the bigger landowners on this account and several have preferred to go to Poona instead of the local Agricultural College for the same reason.

Though a number of good men have passed through this College in the last twenty years, the recruitment till recently has on the whole been from those who have just managed to pass a matriculation examination and the general level of mental attainment has been too low for the standard aimed at in the full degree (diploma) course. This it is hoped will be rectified by affiliation.

The University, in its turn, stands to gain by affiliation with a fully equipped and well staffed institution investigating and teaching a subject of primary importance to 80 per cent total population.

142. *Results.*—Since 1916 the certificate has been awarded both to the certificate class and to the men who were taking the diploma class on the results of the intermediate examination at the end of the second year. Only the men who attained a first class certificate standard were permitted to take the last part of the diploma course. An average of eight men attained this each year. The average number qualifying for the certificate is eighteen and for the diploma is five.

The College is strictly residential. The Hostel is capable of holding 115 students and is at present full. In the selection of candidates, relationship to agriculture, educational qualifications and physical ability are considered on deciding admittance. Students whose field work and industry are unsatisfactory are not kept. The College and Hostel are well placed in regard to the farm, gardens, veterinary hospital and laboratories. It is well equipped in all sections at the present day.

The College gives practical short courses in animal husbandry and dairying, at which several men have been trained and the agricultural engineering section holds short practical courses in oil-engines and tractor management.

143. *Rural education—General policy.*—Since 1917, when the Government of India emphasised the necessity for affording increased facilities for vocational training the subject of agricultural education has been constantly under discussion.

Generally speaking, the educational policy of Government has supported every attempt to bring primary education more in harmony with rural surroundings and to give it a rural bias, but it has not been found practicable to embark upon any general course of direct agricultural instruction. In 1918, a liaison officer from the Agriculture Department was appointed to assist the Education Department in the adaptation of text books to rural needs and the development of nature study and to organise agricultural vocation classes for teachers. Experiments in individual schools, by local bodies or individuals, in the direction of direct agricultural training, especially in the neighbourhood of Government farms, where the farm staff could be utilised, have been welcomed. This policy has been supported by the opinion of the Curricula Committee appointed in 1921, which definitely advised against specialised vocational training in ordinary schools, and of the Vocational Training Committee appointed in 1922 which expressed the same opinion, but considered that agriculture might be introduced experimentally as an alternative to hand work into rural middle schools.

144. *Experiments in direct agricultural instruction.*—Certain attempts have, however, been made to meet the demand that definite agricultural instruction should be imparted in rural schools. The most important of these was the opening of two schools in the year 1918-19, one in the wheat tract and the other in the rice tract. These schools were originally designed with the idea of taking, from the upper standards of the middle school, sons of cultivators, who under normal conditions would, on leaving the middle school, return to their land and of giving them a finishing education largely agricultural but including some general education on lines applicable to their profession. Teachers were secured from the Education Department and were speically trained at the Agricultural College. They were helped by agricultural assistants attached to the farms. At first there seemed to be a future for these schools and as the result of propaganda a certain number of rural boys came forward but attendance soon fell away and interest declined. The school in the rice tract is now closed. Its establishment in a backward tract was probably a mistake, in that the people among whom it was placed had yet to learn the advantages of better methods. The school in the wheat tract has been gradually changed from a vocational to a pre-vocational school and is now, to all intents, a vernacular middle school,

taking boys from the fifth to eighth standards, and providing a course which replaces elementary science, drawing and history by agriculture and survey and gives the boys two hours per morning on the farm. In this form it shows signs of proving popular among the better class cultivators and landowners of its locality.

The objection to the older form was that the school led nowhere. Sons of the better class agriculturists could not pass on to higher education of any kind, while those whose sons were destined to return to their father's land had yet to learn that their boys gained anything of value from such a school. In its present form, the restriction on advance is removed and the boy continues to live among rural surroundings.

Another type has been an attempt to start purely agricultural classes for the cultivator's sons whose general elementary education was over. The first effort was made in 1922 at the Akola farm in the cotton tract, generally the most advanced in the Provinces, and the class was intended to cater for the needs of Berar. A few students turned up but there was but little enthusiasm and after a year it was discontinued. The defects lay in the fact that the farm selected, though the main farm in the tract, is of really a specialist type and was not under the officer directly responsible for the class. Again, the boys came from too great a distance. The experience gained as a result of the malguzari class had not been utilised.

Similar seasonal agricultural classes to be held on the local seed and demonstration farms of two other districts in Berar are under consideration and in one of these particularly, there has been an active demand for such training.

Another type has taken the form of short courses of practical work on Government farms, usually to train cultivators or servants of big landlords, on special lines of work, such as transplanting and the like.

The last type tried has been an attempt to give the pupils of an ordinary rural vernacular middle school three or four hours a week in practical agriculture on a departmental demonstration plot near the school. This simple form is about to be extended, where possible, in co-operation with the Educational Department.

* * * *

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(*a*) (i) That the money available in the Provinces is insufficient to meet the full requirements of agricultural research may be considered an established fact. Such being the case, the funds which Provincial Governments can devote to this beneficent, but not always obviously remunerative, work need to be supplemented from outside sources. At the same time it must be recognised that Agriculture is a Transferred subject for the development of which each Province is responsible to itself and assistance from a source outside the Province should be given in such a manner that this responsibility is unimpaired.

I suggest that the formation of a central fund or funds is essential and the success which has followed the work of the Indian Central Cotton Committee leads to the conclusion that similar plans could be adopted for other main crops. This fund could be provided by a cess on the exports of wheat, rice, oil-seeds and cakes, hides, bones, etc., and also on such quantities of these articles as are supplied to mills in India for local consumption. From the Annual Statement of the Sea-borne Trade of British India with the British Empire and Foreign Countries for the fiscal year ending 31st March 1925, the following figures of exports are taken:—

Wheat.	Rice.	Oil-seeds.	Hides.	Bones.
Tons.	Tons.	Tons.	Tons.	Tons.
1,289,315	2,200,973	1,328,456	55,588	68,279

Even fixing the cess at such a moderate rate as eight annas per ton the total sum which would accrue amounts roughly to wheat Rs. 6,45,000, rice Rs. 11,00,000, oil-seeds Rs. 6,46,000, hides Rs. 27,800 and bones Rs. 34,000 A higher rate could be charged for hides and bones and a lower for crops which give only a relatively small weight of produce per acre. The figures given above only form a rough guide to the amount of money which might be available and would need careful moderation and adaptation to the various crops. The low rate proposed would have only a very small effect on the profits of the actual cultivator.

For the administration of the fund, I propose that a number of sub or crop committees should be formed dealing with the main crops such as wheat, rice, oil-seeds, fibres and also with animal husbandry. These committees should be composed of representatives of the growers, the trade and agricultural officers, each under its own president, thus following the organisation of the Indian Central Cotton Committee but the individual committees might be smaller in number than the present cotton committee. Each Province growing a sufficient area of a particular crop to make it one of the main agricultural interests of the Province should be represented on the crop committees. The total fund to be allotted to research might be controlled by a Research Fund Committee under the Government of India and composed of the presidents of each sub or crop committee with an officer appointed by the Government of India as President and such other members as the Government of India might appoint. The animal husbandry committee would have the same status as the crop committees.

The President of each sub-committee would secure from the central fund a grant of money to be devoted to his particular subject, *i.e.*, wheat, cattle improvement, fibres, etc. The procedure to be adopted in allotting funds to various Provinces might be on the following broad lines. Any Province wishing to secure a grant of money from the central fund would submit a detailed scheme of the work it proposes to undertake. This scheme would be considered by the Research Fund Committee. On approval or modification of the scheme by this committee an allotment of funds could be made. Further, if from its knowledge of work being carried on in other Provinces, the Research Fund Committee considered that development should take place on similar lines in any Province then it could make a grant for the purpose to that Province providing that proper arrangements for the utilisation of such a grant were made. Under these proposals the Central or Research Fund Committee would have powers of control, scrutiny and allotment while the provincial authority would be responsible for carrying out the work. When once a grant had been made and subject to an annual progress report, a Province should be given free financial control over any grant allotted to it. The arrangements as at present

in force with the Indian Central Cotton Committee are too complicated and would be too time-absorbing for extension to the work of a number of other similar committees. If the staff employed in a Province were found insufficient to deal with the problems confronting it, then additional workers should be obtained and paid for from the grant made to the Province. As suitable men are not always easily obtainable, it might be desirable for a staff reserve to be maintained by the Government of India at Pusa or elsewhere but when once an officer has been sent to work in a Province, he should be under the entire control of the Director of Agriculture in that Province.

(ii) The provision for veterinary research in this Province in my opinion, is insufficient. At present accommodation is provided in the Agricultural Research Institute. Not only is this in itself very meagre but the rooms occupied by the Veterinary Department are badly needed by the Agricultural Department to allow for proper expansion.

A Provincial Veterinary Research Institute is, I consider, absolutely essential so that our efforts to improve the cattle of the Province may not be handicapped by present diseases which might be prevented or controlled.

(*b*) The Department of Agriculture in the Central Provinces should, I consider, have a special Statistical Officer and Economist added to its staff. He would deal with such subjects as co-operative marketing and general rural economics while at certain seasons he would be employed in analysing statistical data concerning the yields of agricultural produce, etc. The need for such an officer has frequently been expressed (*vide* Resolution Nos. VI, VII and X of the Proceedings of the Board of Agriculture in India held on 21st January 1924). The status of the proposed Agricultural Economist should be similar to that of the officers at present in the Indian Agricultural Service

In view of the recognised importance of agricultural bacteriology, the section of the department which deals with this subject should be expanded At present, we have one assistant only, who is in the Provincial Agricultural Service and subordinate to the Agricultural Chemist. The work to be done is more than he can manage single handed. As the Mycological Section has been separated from the Botanical and an independent Imperial Service officer placed in charge, so I consider the importance of the Bacteriologist's work demands that he too should be able to develop his section on a wider basis with an increased staff and independently of the Chemical Section. The position of the Agricultural Bacteriologist in the department should be similar to that of the Mycologist and other sectional officers.

In this connection, reference may be made to Resolution No. I of the Proceedings of the Board of Agriculture held at Pusa on 1st December 1919 and Resolution No. II of the Proceedings of the Bangalore meeting held in January 1924.

(*c*) Research on the following subjects is not at present receiving as much attention as their importance demands:—

(i) Major crops such as oil-seeds, small millets and fibres. This would be taken in hand if the botanical staff were increased.

(ii) This department has no Soil Physicist All teaching in the subject is given by one of the Lecturers in Agriculture at the Agricultural College.

(iii) The department had a trained Horticulturist until 1924 when his services were dispensed with. Since then the duties of the Horticulturist have been carried out by other officers of the department who have already plenty of work to employ their full time.

QUESTION 2.—AGRICULTURAL EDUCATION—(i) Please see Chapter XVI of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 21—23 above)

This reply has reference only to the provision of technical instruction in agriculture.

The department has one college of University rank and a degree in agriculture is given after a course of study lasting about four years. It also provides a two-year course in the more practical side of agriculture for students who do not intend to proceed to the higher course. I consider this provision is ample at present and there is no difficulty with regard to the supply of teachers.

MR. F. J. PLYMEN.

A farm with a school for providing instruction in practical agriculture is under construction in Berar and facilities have been offered for short courses of training on other Government farms. Full advantage has not always been taken of these facilities and even now some students sent to the Yeotmal farm for training in agriculture are under a bond to take up employment under the District Board, Yeotmal, as teachers in primary schools. This arrangement will not further the main idea of the course, *viz.*, to give a practical training to prospective farmers.

(ii) No. When the facilities at present available are utilised to their fullest extent we shall be prepared to extend them.

(iii) This is hardly a matter which affects the teaching of agriculture as a vocation, but as a general proposition I do not think it necessary to insist that teachers in rural areas should invariably be drawn from the agricultural classes. In a tract of country so pre-eminently agricultural as the Central Provinces and Berar, a large proportion of the teaching staff must inevitably be drawn from this source, but I doubt if this fact makes the teacher more efficient when, after training, he goes back to the rural areas.

(iv) Yes. The father does not appreciate the value of an agricultural training for his son. This is largely because, in so many cases, he himelf has had a very inferior education and cannot visualise the need for anything better. With the wider extension of general education, this obstacle will be gradually overcome.

(v) The prospect of obtaining some form of Government service has been the main inducement to youths to join any institution offering a training in agriculture whether it be a practical class on a farm or a college offering a fairly advanced course extending over some years. Very few have come with a desire to improve the agricultural practice on their own land. With an increasing appreciation of the benefits to be derived from a training in agriculture, the position is slowly changing. The affiliation of the Nagpur College to the University has been an accelerating factor in this direction.

(vi) Yes, as the agricultural classes predominate so largely in this Province. In selecting candidates for admission to the Agricultural College, the Principal endeavours to secure students who eventually will be in a position to put their training into practice on the land.

(vii) Not at present but when modifications are called for they are duly carried out.

(viii) (*a*) Nature study is of value in training the powers of observation when the subject is properly taught, but I do not think that it necessarily leads a boy to take an interest in agriculture. The enthusiasm, resourcefulness and capacity of the teacher are of the utmost importance. Nature study taught by close adherence to text-book is practically worthless

(*b*) School plots have their value when they are worked on practical lines and the various operations of agriculture or horticulture carried out according to the methods followed by good farmers or gardeners. Here again everything depends upon the capability of the instructor. In suitable areas and where plots of land sufficiently adjacent to the school can be obtained, an extended experiment in rural education with the aid of the school plot should, I consider, be made.

(*c*) School farms are not of any value for young boys. Either the manual labour is too severe and the boys are too tired to give their best energies to the other subjects taught in the school or else the work has to be done by hired labour and the boy learns to watch instead of to work, a tendency already too prevalent.

In schools where agriculture is definitely taught as a vocation, the school farm is a necessity.

(ix) This information will be supplied by the Principal of the Agricultural College.

(x) Agriculture will be more attractive to middle class youths when it is made more profitable and when the general conditions of rural life become such that educated men can feel there is full scope for their energies and abilities outside the urban areas.

(xi) Temporary Assistants who have recently passed out of the Agricultural College are taken on the staff of the department and kept on a farm for a few years. These men may be absorbed into the departmental cadre, may take up private service, or may go back to their own land with an improved knowledge of practical agricultural problems.

MR. F. J. PLYMEN.

We have also a scheme for refresher courses to be given at headquarters by specialist officers but owing to paucity of staff this scheme has not yet been put into operation.

(xii) In so far as this refers to education in the principles and practice of agriculture, adult education can, I consider, best be popularised by improving the demonstration work carried out in rural areas by the staff of the Agricultural Department.

(xiii) I have no definite scheme to suggest as we are still experimenting along the lines already indicated in replies to previous sections of this question.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) Please refer to the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar, particularly to paragraphs 86, 87, 88, 89 and Chapter XIII" (pages 9—11 and 14—18 above).

(*b*)The effectiveness of field demonstrations is closely correlated with the efficiency of the demonstrator or Agricultural Assistant. These officers vary very much in quality and I do not consider they have always been sufficiently enthusiastic to impress their teaching upon the public, nor do I think they have always been provided with sufficient facilities for the purpose. Their demonstrations have not invariably been made attractive enough and the visit of an Agricultural Assistant to a village has not been the event in village life which it should be. A certain amount has been done by providing lantern lectures but attractive travelling exhibits are necessary. In the neighbourhood of main roads, I should like to have demonstration motor lorries provided with the cinemas which could be used by all departments of Government dealing with the improvement of village life. Where roads do not permit of motor vehicles we should have to be content with taking exhibits around on a specially constructed cart. If an Agricultural Assistant had a really attractive 'show' to appeal to the eye as well as to the ear he would, I believe, easily command an attentive audience drawn from a considerable radius.

(*c*) The chief method whereby a cultivator can be induced to adopt expert advice in my opinion is the demonstration plot. This should show him how to farm to the best advantage an area approximating to the size of his own holding. Our ultimate aim should be to have such a plot within reasonable reach of every village. In some tracts of country such plots would have to be entirely financed by Government, in others Agricultural Associations or private individuals could run demonstration plots under the advice of officers of the Agricultural Department. The need for demonstration plots is fully realised by this department and we are gradually increasing the number.

QUESTION 4.—ADMINISTRATION —(*a*) and (*b*) This question has been dealt with in the reply to question 1 (*a*) In my opinion, one of the best means to ensure the better co-ordination of the activities of the various Governments in India would be the financing, by the Central Government, of schemes to provide for work which, owing to scarcity of funds, any Provincial Government is unable to undertake for itself I do not consider it would be feasible for a central organisation to attempt to co-ordinate work for the upkeep of which it was not financially responsible Under the proposals made in reply to Question 1, the funds at the disposal of the Government of India might only be allotted where provision for co-ordination of work and co-operation in necessary directions had been secured

There is also a need for a Bureau to summarise the work already done in the Provinces and to maintain such a summary in future years. This could be maintained by the Central Government.

In the case of All-India legislation on agricultural matters, it is doubtless desirable for the Government of India to have at its disposal some organisation to advise regarding such legislation.

(*c*) (ii) The present regulations regarding railway rates for the transport of agricultural produce, machinery and other requirements need to be closely examined. For example, sugarcane mills are not classed as agricultural implements and oil-cake is conveyed at different rates depending upon whether it is classified as manure or cattle food.

(*c*) (iv) The Agricultural Department would welcome any improved methods for the wider and more timely dissemination of weather forecasts. In this connection, the value of wireless telegraphy might be considered.

QUESTION 5.—FINANCE.—(*a*) Please see paragraph 51 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (page 8 above).

MR. F. J. PLYMEN.

It is desirable that the system of issuing *taccavi* in kind and not in cash should be extended as widely as possible, particularly to co-operative associations and for short-term loans. I do not favour the provision of much cheaper credit than can be obtained under the present system as this would only tend towards increased indebtedness and one of the present paramount needs of the cultivating classes is greater thrift.

(*b*) The system under which *taccavi* loans are issued should be both simple and speedy. With an increased demand for such loans, it may be necessary to appoint special *taccavi* officers to deal with the applications.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS —(*a*), (*b*) and (*c*) Please refer to paragraphs 45 to 50 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 6 and 7 above).

There is considerable scope for giving assistance to the cultivator through such financing agencies as land mortgage banks. Legislation is also required on the lines of the Deccan Agriculturists' Relief Act. All these questions need to be taken up in detail by a whole-time officer who could specialise in the subject.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—This question has already been considered and notes* prepared on the subject by Mr. J F. Dyer, Commissioner, Chhattisgarh Division. Please refer also to paragraph 6 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 1 and 2 above).

QUESTION 8.—IRRIGATION —(*a*) (ii) Some development appears to be necessary in the northern part of the Province and the extension of irrigation from tanks is desirable. This will be dealt with in fuller detail by the Deputy Director of Agriculture, Northern Circle in his written evidence.

(*a*) (iii) In some parts of this Province, particularly in Berar and the plateau districts, irrigation is largely done from wells The supply of water from this source is of such importance that I consider the employment of a specialist to deal with the question is essential. He should investigate the whole subject of underground water and the conditions which govern its availability for irrigation purposes. This is particularly necessary in areas where the "Deccan Trap" is the prevailing geological formation as the occurrence of water in this rock is generally a very uncertain matter.

QUESTION 9.- SOILS.—(*a*) (i) Drainage has proved a satisfactory method of dealing with soils in areas where water-logging prevails at certain times of the year. Two methods have been followed—underground pipe drains and surface drains. The former is a somewhat expensive process and its adoption on an increased scale can only be expected by obtaining increased monetary returns from the crops grown on underdrained areas. Drains and other forms of land improvement can be financed by loans taken out under the Land Improvement Loans Act.

(*a*) (ii) Alkali (*kar*) land is not of great importance in this Province as it only occurs in small patches. There is an area in Berar where the wells are distinctly saline and unsuited to irrigation. Injurious effects produced by using such waters for irrigation purposes can be overcome by giving the soil a rest from irrigated crops and allowing the rainfall of the monsoon to leach the injurious salts out of the soil.

(*a*) (iii) The system of *bunding*, *i.e.*, the erection of field embankments, is common in certain parts of this Province although the object is not always to prevent erosion of the surface soil but sometimes to ensure that a sufficient amount of moisture shall remain in the soil. Where water tends to flow from the fields of one cultivator to those of another it is very desirable that there should be co-operation amongst cultivators in order that the excess water should be removed without doing damage to the fields of any particular cultivator.

(*b*) (i) On some Government farms, the proper lay-out of the area, protection from erosion and in some cases, underdraining of wet fields, have resulted in considerable improvement in the area.

(*b*) (ii) *and* (*c*) Within recent times it may be said that a fairly large area of good wheat land has deteriorated owing to the growth of *kans* grass (*Saccharum spontaneum*). The Agricultural Department is meeting this difficulty by undertaking ploughing with bullock-drawn iron ploughs on contract and has recently secured a steam ploughing set for dealing with large areas.

*See pages 152-160.

QUESTION 10.—FERTILISERS.—(*a*) Greater use could undoubtedly be made of natural manures and artificial fertilisers. The department demonstrates the proper methods of preserving manures and utilising cattle urine as one of its main lines of work. In a general way it may be said that there is considerable scope for both natural and artificial manures on wet crops but not for artificial manures to be applied to staple crops in the dry season. The chief factor controlling any possible extension in the use of artificial fertilisers at present is the price. It is very important that the fertiliser trade should realise the all-importance of cheapness if the use of artificial manures is to make any headway. Every effort should be made to cut down overhead charges and the services of the Agricultural Department should be utilised to the fullest extent.

(*b*) The present trade in fertilisers in this Province being so small, no special measures are necessary to prevent fraudulent adulteration. The Department of Agriculture keeps a close watch on the fertilisers coming into the Province and samples are frequently subjected to analysis.

(*c*) Widespread demonstration and cheap rates are the two things necessary to popularise new fertilisers. Firms interested in the trade should be willing to supply such fertilisers for demonstration purposes either gratis or at very low rates. I would add that I have found the trade quite prepared to do so. I would also emphasise that the selling price fixed for manures on their first introduction into a Province should not be so low as to necessitate a big increase when the value of the manure has been demonstrated. Otherwise the confidence of the agriculturists would be lost.

(*d*) There has been a considerable increase in the use of manures at the following places:—

Karanja cake (*Pongamia glabra*) for sugarcane in Betul and Jubbulpore.

Til cake (*Sesamum Indicum*) in the Southern and Eastern Circles.

Ammonium sulphate for cotton at Hoshangabad.

(*e*) Investigations up to the present have not been sufficient but that subject is one which is receiving constant attention on Government farms. A bulletin summarising results up to date has been published

(*f*) Please see "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar", paragraph 67 (page 9 above). It is only by demonstrating the greater economic value of cowdung as a manure that the practice of using it as fuel can be discouraged.

QUESTION 11.—CROPS.—(*a*) (i) Please see paragraphs 90 to 94 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 11 and 12 above).

(*a*) (ii) *and* (iii) *and* (*c*) These subjects have been dealt with in paragraphs 109 to 114 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 15 to 17 above)

I consider it essential that any new crop which is recommended for a Province should be one which can be reproduced by seed or otherwise in that Province or at least in some other part of India. For example, *berseem* clover (*Trifolium Alexandrinum*) is undoubtedly a valuable fodder crop but as the seed has to be imported yearly from abroad, the extension of its cultivation in the Province is limited. The botanical staff of the department has recently taken up the study of fodder crops, including grasses, as one of its important lines of work.

(*a*) (iv) This is a subject which has received a considerable amount of attention as the damage done by wild animals, chiefly pig, in this Province is extensive. The extension of some valuable crops, *e.g.*, ground-nut and sugarcane, is hindered owing to the expense involved in fencing and watching. Economy can, however, be practised by concentrating the area under such crops and this has been carried out successfully in the Western Circle with regard to ground-nut.

In 1925 a scheme was formulated by this department for an organised attack on wild pig by the aid of professional *shikaris* but funds could not be provided and the scheme has been held in abeyance. This, however, is really a matter in which the cultivators should help themselves by organisation and co-operation. It has been done successfully as in three years as many as 27,000 pigs were killed in the north of the Province by organised beats, local cultivators paying a few annas for each pig killed.

QUESTION 12.—CULTIVATION.—(i) Reference is invited to Chapter XIII of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 14—18 above). The improvements which have taken place in this Province in previously existing systems of tillage have been in the introduction of iron ploughs, sowing in lines instead of broadcast and the introduction of more efficient implements for interculture. It may be noted that there are now about 27 privately owned tractors working in the Province.

(ii) Little can be said with regard to the present possibility of improving the customary rotations or mixtures of the more important crops except that in certain cases there is a tendency to overlook the necessity for a rotation in the desire to put a larger area under money crop. Ground-nut has proved a very useful rotation crop for cotton and *sann* promises to take a similar place in the agriculture of the plateau districts. The mixture of minor millets and *til* (*Sesamum Indicum*) which is grown in the Chhattisgarh should be capable of improvement but care must be taken in replacing such practices, as the growing of a mixed crop often takes the form of insurance against total loss of crop.

QUESTION 13.—CROP PROTECTION.—(i) This department has not had a great deal of experience in the working of the existing legislation for preventing the importation of dangerous plant diseases and pests as laid down in Government of India Notification No. 580-240, dated the 26th June 1922

My personal opinion is that the procedure at present followed is not always efficient and takes too long Recently a valuable consignment of plants was delayed for about 10 days in Bombay and on arrival at Nagpur they were practically all dead. On another occasion I have actually found live insects in a consignment of plants which presumably had been subjected to the system of disinfection followed under the regulations. The importation of new or improved varieties of plants is seriously handicapped by the present regulations and I consider local Departments of Agriculture should be given more power and responsibility. Anything imported by the Director of Agriculture should be delivered to that officer direct and he should be held responsible for seeing that no injurious plant disease or pest is thereby introduced into his Province. Exceptions are already made in the case of certain plants and I see no reason why this practice should not be extended.

(ii) It is desirable that the Agriculture Department should be able to specify dangerous plants such as lantana and water-hyacinth, the destruction of which should be made compulsory.

QUESTION 14.—IMPLEMENTS.—(*a*) Reference is invited to paragraphs 98, 99, 115, 116 and 117 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 13, 17 and 18 above).

The post of Agricultural Engineer should be considered one of the most important in an Agricultural Department He should be an officer capable of appreciating agricultural requirements and of devising implements to meet the same.

(*b*) Increased and more efficient demonstration is the chief method by which the adoption of improved implements can be increased. It must further be stated that simplicity of construction, elimination of all non-essential parts, provision of spare parts, where necessary, and a supply at the lowest possible cost are the essentials which should receive the attention of implements makers. As in the case of fertilisers, implements should originally be put on the market at a price not greatly below that at which it is expected they will be sold in the future. Attractive prices, which cannot be maintained, may create a demand at first but will eventually lead to disappointment.

QUESTION 15.—VETERINARY.—(*a*) I do not think the Civil Veterinary Department should be under the Director of Agriculture but the two departments should work in close co operation. The Civil Veterinary Department of this Province was removed from the control of the Director of Agriculture in the year 1921 and I do not consider this has resulted in weakening the co-operation between the two departments.

(*c*) I consider the staff of the Veterinary Department should be increased so that outbreaks of disease could be dealt with more promptly.

(*g*) A Provincial Veterinary Research Institute is a necessity in a Province so largely agricultural as the Central Provinces and Berar.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (i) Reference is invited to Chapter XIV of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 18—20 above).

Comprehensive proposals for improving the breeds of livestock in this Province have already been framed and copies are attached.* If these schemes can be put into effect, the department will have sufficient work in animal husbandry to occupy its attention for some years

(ii) The betterment of the dairying industry is one of the greatest needs in this Province and a certain amount of progress may be possible on co-operative lines. The improvement of the milch animal must, however, precede any great advance in dairying.

(*b*) (i) This is bad everywhere The following figures relating to the Central Provinces and Berar have been supplied by the Deputy Director of Agriculture in charge of Animal Husbandry.—

	Acres.
Land, exclusive of forest areas, classed as not available for cultivation and culturable waste other than fallow	19,500,000
Total number of cattle (*i e*, all classes of bulls, cows, buffaloes and their young stock)	11,800,000
	or 1 6 acres per head of stock.

In addition to the above, the following is the forest area available for grazing in the Central Provinces and Berar·—

	Sq. miles.
Total forest area in the Central Provinces and Berar	19 700 including
Area thrown open for grazing to animals other than browsers	12,500
	or 8,000,000 acres

The maximum grazing area available for cattle in the Central Provinces and Berar is thus 19½ million *plus* 8 million, *i e*., 27½ million acres or approximately 2.3 acres per head of the cattle population.

It must be remembered that the grazing is of exceedingly poor quality and the Deputy Director of Agriculture in charge of Animal Husbandry estimates that, on an average, about 5 acres per head would be required to keep an adult animal in fair condition or in other words these Provinces are at least 100 per cent overstocked.

The opening of additional forest areas for indiscriminate grazing offers no hope of solving the problem of insufficient fodder supply. On the other hand, it would only tend to aggravate the evil by providing still greater facilities for the breeding of inferior cattle on unscientific lines.

(ii) In my opinion, there has been a decided tendency in recent years to cut down the area left as a grass border in tilled fields in order to increase the area under money-producing crops.

(iii) In the tracts, where wheat or rice is the main crop, there is a sufficiency of straw for fodder In the cotton country, partly owing to the increase in the area under cotton and in also years when the crop is poor, the supply of *juar* fodder is sometimes deficient.

(iv) There is a general absence of green fodder in dry seasons This is due to the high temperature prevailing in the hot weather and also to the impossibility of growing any large area of fodder crop under irrigation.

(v) This is essentially a subject for research in a central institute with subsidiary investigation in the Provinces.

(*c*) Generally speaking, the fodder supply in the Central Provinces and Berar begins to deteriorate in February and March. In April and May, there is very little grazing at all and such as then exists is extremely poor. June and July are the most trying months. In a year of normal rainfall, stock begin to improve in August and remain in fairly good condition till the end of January

(*d*) The system of keeping reserves of baled grass to meet famine or scarcity conditions might be extended. The grass would be cut and baled in forest areas but the price at which it could eventually be supplied to cultivators would depend upon the cost of transport and further improvements in rail and road communications.

*Not printed.

(*e*) The interest of a landlord in animal husbandry and in all farming operations will, I consider, increase when these operations can be made to give a bigger financial return and when agriculture as a profession is considered to be worthy of more attention from all points of view.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) Please refer to the independent answers supplied by Deputy Directors of Agriculture in this Province.

(*b*) and (*c*) The following subsidiary industries are worthy of attention :—

(i) Vegetable and fruit growing for home consumption or market purposes in favourable localities and where markets exist.

(ii) Poultry farming.

(iii) Rope-making, basket-making and similar manual occupations

To encourage a greater interest in vegetable and fruit growing, the Horticultural Section of the department should be strengthened. We have no expert Horticulturist at present and in a Province where citrus cultivation is of considerable importance and the supply of vegetables distinctly poor, better arrangements for technical instruction in horticulture should be made The establishment of a fruit garden is a non-paying proposition for the first few years and it might be desirable for Government to finance cultivators if they contemplate planting up of fruit orchards and while no returns from the latter can be expected. Better arrangements for marketing should be made and also for transport of fruit by rail. At one time the loss on fruits sent in baskets by rail was very heavy, but recently special provision has been made for watch and ward by the railway authorities.

Rope-making might easily become a subsidiary industry in areas where *sann* hemp is produced, but for this also special technical instruction must be provided. Poultry farming is an industry which does not make a general appeal and only certain castes and classes of the community will touch it. Useful information might be obtained by consideration of the reasons which led to the abandonment of poultry rearing at Pusa a few years ago.

Sericulture has been tried in this Province, but the results were not very promising. Lac culture is a useful subsidiary occupation and is being encouraged. More could still be done with a bigger staff of assistants on extension work.

(*d*) The establishment of industries connected in some degree with the preparation of agricultural produce for consumption, such as those given in the question under reply is, I think, a matter for private enterprise and there does not appear to me to be any great need for Government to take the initiative.

(*e*) There would be certain advantages if industrial concerns moved to rural areas. For example, the establishment of oil presses or rope-making factories would create local and probably better markets for produce obtained in the surrounding area. On the other hand, the establishment of such industrial organisations would almost surely lead to a higher wage rate in the locality and this would have considerable effect upon the wages which agriculturists would have to pay to their labourers.

(*f*) Yes. I consider such a study is essential before the improvement of any rural industry can be undertaken.

(*g*) I do not consider any measures are necessary at present to provide greater rural employment other than the improvement of the whole agricultural position of the country. In general, there is a scarcity of labour rather than an excess and employment in rural areas needs to be intensified on the land rather than extended in new directions.

(*h*) There is undoubtedly scope for the village population to devote themselves to the better lay-out of their village and to the improvement of the sanitary conditions of the same. Such efforts could be carried out under the advice and direction of the Public Health authorities. Before the need for such improvement is fully realised, the general standard of education in many parts of this Province will have to be raised and the spirit of co-operation for the public good inculcated.

QUESTION 18.—AGRICULTURAL LABOUR.—(*a*) (i) The seasonal movement of labour from areas where there is a surplus to others where a shortage prevails takes place spontaneously and no particular measures are necessary to encourage the same, other than a general improvement in communications. This seasonal migration is dealt with in detail in paragraphs 25 to 28 and 31 of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 3—5 above).

(*a*) (ii) Areas near Government forest which have been found suitable for cultivation have been excised and formed into ryotwari villages. This system might be extended should a demand for such land exist. The total area dealt with in this manner in the last twenty-five years has amounted to about 2,500 sq. miles.

(*b*) That there are seasons during which labour is in demand in certain areas is clear from the references given in reply to (*a*) above. This shortage of labour is really due to scarcity of adult population and can be ascribed to the following causes :—

(1) mortality amongst the young,
(2) inefficiency of the labourer, this being largely on account of disease.

The introduction of labour-saving machinery is one way by which the scarcity of labour can be overcome and his efficiency will be gradually enhanced by the provision of means for improving his health and education.

(*c*) This question is not applicable to the Central Provinces and Berar as we have no surplus agricultural labour.

QUESTION 19.—FORESTS.—(*a*) For reasons given in reply to Question 16, I consider that no permanent good to agricultural interest would result from a general extension of the present facilities for grazing in forest areas. In order however to utilise the forests still further to meet the needs of the agriculturist I consider that suitable forest areas should be devoted to cattle-breeding on a properly organised basis This department has at present one or two such schemes under consideration and when suitable breeding stock is available it is hoped that this system will be more widely adopted. A forest area which could provide good bullocks and milch cattle should be of more value to the country at large than it is at present in suppyling a certain amount of timber and grass. The total amount of forest required for cattle-breeding purposes would only form a very small fraction of the total forest area in the Province.

(*b*) Please see paragraphs 64 to 66 of the "Memorandum on Rural conditions and Agricultural Development in the Central Provinces and Berar" (pages 8 and 9 above) and also replies to (*d*) and (*e*) of this question.

Recent experience in Berar indicates that there is likely to be a keen demand for baled grass from reserves close at hand, but not if the grass has to be brought any considerable distance. For example, few purchasers were found for the baled grass produced in the Nimar Division, but there was a large demand for that available in the Ambabarwa reserve which is in Berar itself.

(*d*) In my opinion, steps should be taken to prevent the erosion of the soil by the monsoon rains particularly in the neighbourhood of large rivers. Deep ravines or *nullahs* are gradually being formed and much soil is being washed away. It should be possible to undertake the planting up of these areas with trees on the lines of *Donga* reclamation which has been successful in South Africa. When once soil erosion has been arrested, a crop of grass will naturally follow in areas where at present the soil is absolutely bare.

(*e*) I consider there are such openings where fodder and fuel supplies are scarce and where waste land exists in the neighbourhood of villages.

QUESTION 20.—MARKETING —(*a*), (*b*) *and* (*c*) A special report on marketing is being submitted. Please see also Chapter IV of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" (pages 2 and 3 above).

(*d*) Yes and if the special crop committees as recommended in reply to Question 1 are appointed, they would form a suitable agency to collect and give publicity to such information, since the proposed constitution of these committees includes representatives of the trade and of growers. There is considerable need for Departments of Agriculture to get into still closer touch with the trade so that we can obtain specific and detailed information regarding defects in Indian produce. Such information should include figures regarding the monetary loss incurred by placing inferior material on the market and the gain which would follow the substitution of a superior article for an inferior one. This is necessary because the ordinary agriculturist must have concrete figures placed before him. Such generalisations as the loss of status in the world's market or the threat of competition arising in other countries are too general to make any effective appeal.

MR. F. J. PLYMEN.

QUESTION 22.—CO-OPERATION.—(*a*) In view of the importance of the co-operative movement in a tract so pre-eminently agricultural as the Central Provinces and Berar, I consider that the Co-operative Department should be under the control of a whole-time officer specially trained in the subject. This officer should remain in charge of the Co-operative Department for a sufficient number of years so that his experience would be of continually increasing value. He should work in close association with the Director of Agriculture and any arrangements made for improved propaganda work on behalf of the Agriculture Department should include similar work on behalf of co-operation. The subject of co-operative marketing should also be developed, as by following such a system it is expected that definite financial profits would accrue to the cultivators and they would see that co-operation was something more than ideal in that it led to really practical advantages. The extension of co-operation by means of non-official agencies would be much easier after its financial benefits had been realised and the inculcation of a better public spirit, on which the co-operative movement really depends, would be stimulated

(*b*) (i) to (v) Credit societies, purchase societies and societies formed for the sale of produce or stock can, I think, all be brought together under one organisation. Such societies, in which some obvious financial benefit is likely to result, should receive the first consideration and when they have been established on a sound footing it will be easier to develop more general societies, such as those for effecting improvements for the common good and for dealing with difficult problems such as the consolidation of fragmented holdings.

(vi) Societies for the co-operative use of agricultural machinery have, I believe, a future before them, particularly now that labour-saving machinery is becoming necessary. The types of machinery which might be brought into greater use on a co-operative basis are cotton ginning plants, threshing machines, sowing machines, ploughs worked by power, etc.

(vii) I do not consider there is large scope for joint farming societies, as farming is so much a matter for the individual and it would be difficult to get a number of men to agree as to the proper method and season to be followed in carrying out agricultural operations. It might be possible in the case of a number of capitalists who would employ a well-qualified manager, but at present there appears to be no demand for such organisations.

(viii) Cattle-breeding societies are also a form of co-operative oragnisation for which I do not think this Province is prepared, as the proper breeding of cattle is so essentially a question in which personal control, interest and individualism are concerned.

(ix) I consider there is great need amongst ordinary village committees for some communal effort leading to the betterment of village life In this direction, there appears to be considerable scope for work by retired Government officials if only they are prepared to go back and live in the villages. This might necessitate the issue of loans to enable such men to take up agriculture on a satisfactory basis.

(*c*) I am certainly of the opinion that where co-operative schemes for joint improvement are necessary, legislation should be introduced in order to compel an unwilling and small minority to join a scheme which is for the common good of all. For example, if there is a large area of ground-nut in a village and this is subjected to attack by wild pig it is much more economical for all persons growing the crop to join together for the common fencing of the crop or for watching the same. A few growers should not be allowed to remain outside the common organisation thereby, in all probability, only affording insufficient protection to their crop and providing a bait to draw the pig to the vicinity.

(*d*) I consider that many credit and purchase societies have attained their object but that constant and detailed supervision is necessary to keep them on the right lines. There is also occasionally a tendency to attach too much importance to the making of large profits to the detriment of other objects of general public advantage which should receive more consideration if the true spirit of co-operation is the real guiding motive of the societies.

QUESTION 23.—GENERAL EDUCATION.—(*a*) Existing systems of education do not, I believe, pretend to have any influence on the technical agricultural efficiency of the people. Their main object is to raise the general standard of culture and in

this movement the agricultural community shares. In my opinion, however, the education generally provided, whether higher, middle or elementary, does not tend to turn the middle classes towards an agricultural vocation.

(*b*) (i) Rural education needs to be developed on lines of its own and there is a paramount need for elasticity in the treatment of its problems. The introduction of the definite teaching of agriculture into a certain number of middle schools may yield good results in some places and we have a promising experiment at Powarkhera near Hoshangabad. The attempt to teach agriculture as a vocation was a failure both at this school and also at another started at Chandkhuri in the Raipur district. The Members of the Royal Commission will have opportunities to see both of these institutions.

(ii) I have very little experience of compulsory education in rural areas but I believe such compulsion would be more acceptable amongst some classes if a subsidiary industry (*e g.*, rope making), were taught. The danger would be that a boy would be removed from school at the earliest possible age when it was found he had picked up the rudiments of an occupation.

(iii) When a boy reaches the fourth class, he is just about of an age when he can begin to earn his own living or at least add something to the family finances. The few annas he can earn daily are of more apparent value than extra years spent at school

QUESTION 24.—ATTRACTING CAPITAL.—(*a*) There is one obvious method of inducing a larger number of men of capital and enterprise to take to agriculture, *viz.*, to make that profession more profitable. In this connection, I do not consider it necessary to increase the present facilities available in this Province for obtaining education in the technics of agricultural practice. This could be considered when the present facilities are fully utilised.

(*b*) I do not think there are any important factors tending to discourage owners of agricultural land from carrying out improvements except the general lack of interest evinced in all questions regarding rural welfare.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) I consider the agricultural prosperity of the rural community to be very closely associated with its health, and improvements in the hygienic conditions in rural areas should advance side by side with the efforts which are being made to improve the agricultural conditions of the people

(*b*) In my opinion, economic surveys in typical villages will yield results of considerable value The e should be conducted by agricultural officers with a bias towards economics or by students of economics possessing a knowledge of and sympathy with agriculture. A special staff is, I think, essential as this work cannot be added to the already onerous duties of Deputy Directors of Agriculture.

(*c*) Economic surveys have been made in two villages in this Province by Deputy Directors of Agriculture. The report on one of these enquiries is now being printed.

QUESTION 26.—STATISTICS.—(*a*) (i) Please see reply to Question 1 (*b*) regarding the need for a Statistical Officer.

The figures for areas under cultivation and crops are, in general, sufficiently accurate.

(ii) Far more crop cutting experiments are needed in order to obtain a more reliable figure for the yield of crops. The district staff of the Agricultural Department undoubtedly provides a suitable agency for conducting such experiments but at present the numerical strength of the staff is too weak to enable sufficient experiments to be made in order that a sufficiently accurate figure for average yield may be obtained. When we have reached our present aim of one assistant per tahsil or taluk, more reliable figures will be possible. By that time our staff, many of whom are still young and inexperienced men, will be more qualified to deal with this subject, which is one requiring a considerable amount of local knowledge and observation.

(iii) I have no suggestion to make. The present organisation is satisfactory and the figures sufficiently reliable.

(iv) This information must be obtained from village records maintained by the subordinate staff of the revenue officers The agricultural officer should have nothing to do with it.

Oral Evidence.

27453. *The Chairman*: Mr. Plymen, you are Director of Agriculture in the Central Provinces and Berar?—Yes.

27454. You have provided the Commission with a note of the evidence that you wish to give. Is there anything which you would like to add to the written note at this stage?—No.

27455. Would you please give the Commission an account of your own training and past appointments?—Before coming to this country, I was for 6 or 7 years on the staff of an Agricultural College in England. For the first part of that time I was acting as an Assistant to Sir Daniel Hall and then I worked largely on chemical work, but I undertook a certain amount of external work, in a way, giving lectures to farmers and gardeners. When I joined this department, my first appointment was that of Agricultural Chemist. Since then I have been at various times a Deputy Director and Principal of the Agricultural College.

27456. *Sir Henry Lawrence:* Under Government?—Yes. The whole of my service, except for a short period during the War, has been spent in the Central Provinces.

27457. *The Chairman*. To be sure that the matter is quite clear, would you please give us a statement showing the organisation of your department both at headquarters and in the districts, mentioning the grade of officer holding each group of appointments. There is yourself at the head?—Yes. Then under the Director of Agriculture there are the Deputy Directors in charge of the following Circles. The Northern Circle—headquarters Jubbulpore, the Western Circle—headquarters Amraoti; the Southern Circle—headquarters Nagpur; the Eastern Circle—headquarters Raipur. There is also a Deputy Director of Animal Husbandry with headquarters at Nagpur. Those are the officers concerned with general agriculture. Then also we have, in Nagpur, a scientific staff and there is the Agricultural College with its Principal. There are the Agricultural Chemist, two Economic Botanists and the Mycologist. Those are all officers of the status of the present Imperial Agricultural Service. There is also a post of Agricultural Engineer which is at present vacant. He holds an outside post not on the cadre of the Indian Agricultural Service. I would perhaps add here that the Agricultural Engineer has just resigned. The Agricultural Chemist is now going on long leave and probably will take proportionate pension.

27458. Would you give us particulars of the organisation within the Circles?—Under each of those officers, there are one or more Provincial Service officers whom we term, in this Province, Extra-Assistant Directors of Agriculture. For instance, in the Raipur Circle here we have two Extra-Assistant Directors of Agriculture. They take one or more districts and are responsible for controlling the extension work, that is to say, the demonstration work of the Agricultural Assistants under them. So that we have in a Circle the Deputy Director of Agriculture at the top who is responsible for the whole work. We have the Extra-Assistant Directors of Agriculture under him who are not concerned with the experimental work but are only concerned with the demonstration work, and under those men we have the subordinate staff of the Circle, the Subordinate Agricultural Service.

27459. All one grade?—The Subordinate Agricultural Service is divided into an Upper and a Lower Division. We recruit directly to the Upper Division, but as a rule promotions are made from the Lower Division to the Upper. We recruit to the Upper Division direct from the Agricultural College, men who have passed out well and have taken a four-year course.

27460. And do both Upper and Lower Divisions do propaganda work?—Yes, they are engaged entirely on propaganda work except such of them as work on the farms. We have two classes of farms, seed and demonstration farms which are under the Provincial Service officers and the experimental farms which are under the direct control of the Deputy Directors. I have had a map prepared to show the distribution of those farms throughout the Province.

27461. May I ask you to turn to your note in answer to Question 1 (*a*)? At the commencement of the fourth paragraph on that page you say, "For the administration of the fund, I propose that a number of sub or crop committees

should be formed dealing with the main crops", and then you give a list of the crops. That would be an All-India committee; would it not?—Yes.

27462. And do you envisage provincial crop committees?—No, the whole of the advisory work in the Provinces should, I think, be left in the hands of the present Advisory Board of Agriculture which consists of a certain number of official and a certain number of non-officials.

27463. You are familiar with the working of the Indian Central Cotton Committee?—Yes.

27464. Is it your view that the cultivator is adequately represented in that organisation?—Yes, from what I have seen of the working of the Central Cotton Committee, I think the needs of the cultivator are well looked after.

27465. It is very important that they should be, is it not?—Yes, most important. We have representatives of crop growers on that committee and my own feeling is that the needs of the cultivator are well looked after by the Indian Central Cotton Committee The point has been brought forward by a certain Deputy Commissioner in this Province that the representatives of the growers should perhaps be men who are entirely cotton producers, and we perhaps do not often select these men in quite a satisfactory way. That particular Deputy Commissioner said that he could give the names of ten or twelve good cotton growers who would be suitable members of the Cotton Committee and I stated that the first requirement would be that they should be able to deal with the proceedings of the Cotton Committee which are all in English. "If that is the case", he said "I cannot recommend men who know English as they are not available". I pointed out that for a committee of this sort, which was representative of the whole of India, English was obviously the only language in which the proceedings could be conducted. The fact that the proceedings of this Committee are conducted in English does eliminate certain men who would otherwise be very desirable members of the Cotton Committee.

27466. If the interests of the growers cannot for this or that reason be looked after by representatives of the growers themselves, then would you agree that officers of the Provincial Agricultural Department ought to be careful to see that the interests of the growers are very closely watched on the Committee?—I think their interests are carefully watched, but it does limit the selection of members who represent the growers.

27467. A little further down you say, "The total fund to be allotted to research might be controlled by a Research Fund Committee " Would that be a committee of experts?—Not necessarily. I have stated that it would be composed of the Presidents of each sub or crop committee with an officer appointed by the Government of India as President and with such other members as the Government of India might appoint These officers should be either non-officials or officials

27468. Having had a Research Fund Committee constituted in that manner, with technical officers representing each of the Provinces, you might find that after considerable argument the funds would be disposed of equally between the various Provinces rather than granted in accordance with the merits of particular schemes advanced. Do you follow what I mean? It might be difficult to get a firm decision if you had equal representation from each Province, especially if those representatives were technical officers?—Well, I did not propose that these representatives should necessarily be technical officers but that they should be men with a broad view, a broad knowledge of the needs of the agriculture of the various Provinces and who would be able to allot funds on the merits of schemes put before them.

27469. So that you agree with me that the merits of these schemes should be a prime factor?—Yes, and the claims of the Province should be a secondary factor.

27470. What is your view of Pusa and its place in the agricultural system of this country?—Pusa was started before the provincial departments got going, and I cannot help thinking myself, that had it been foreseen that provincial departments would be organised on the lines and to the extent to which they are at present, Pusa would not have developed as it has. Pusa was developed as a Central Institution, I think, before it was realised that provincial institutions would arise which would to a certain extent take the place of Pusa.

27471. Do you think that Pusa is at this moment rendering good service or not?—No. I do not really think as the provincial departments are organised at present that Pusa affects them much. We have very few problems which we refer to Pusa.

27472. *Sir Ganga Ram:* When you say that you do not think it affects them much, what do you mean?—I mean that it does not benefit them much.

27473. *The Chairman:* Are there not problems of a basic nature and of general application to which a central institution may well devote its attention?—I find very few problems from the Province are ever sent up to Pusa. We occasionally are asked to suggest problems, but for years no problems have been suggested from this Province which Pusa can undertake.

27474. But that may be the fault of the Province, may it not?—I think that the Province feels that it is self-contained and that it can tackle its own problems.

27475. You have an important wheat growing tract here?—We have.

27476. What wheat are you growing?—We largely grow our own wheat.

27477. Are you growing any Pusa wheats?—Some of the Pusa wheats are grown in these tracts, but taking them as a whole we prefer our own wheats to Pusa wheats.

27478. Have you an important sugarcane growing tract?—Not an important sugarcane growing tract, but we have a certain amount of sugarcane cultivation.

27479. Is it a dry or an irrigated tract?—It is an irrigated tract. We have found the Coimbatore canes most useful. In fact, the Coimbatore canes are gradually replacing our local canes We have really found the Coimbatore Station of great value to us in producing canes suitable to this Province.

27480. *Mr Kamat.* Have you derived more advantage from Coimbatore Station than from Pusa?—We have derived more advantage from the Coimbatore Sugarcane Station than from Pusa as a whole.

27481 *The Chairman* What do you say about the touch or the want of touch between your Agricultural Department, particularly on the research side, and the departments in other Provinces?—In replying to this question I am speaking as an officer of the scientific section I do not think the officers of the scientific sections find any difficulty in keeping themselves in touch with the officers doing similar work in other parts of India. It is their business to do so.

27482. How do they keep themselves in touch?—By private correspondence, if necessary, and by reading particular publications just in the same way as a man doing scientific work does keep himself in touch with similar work done all over the world.

27483. What are your principal problems to which you are directing your attention at the moment?—On the botanical side, we are devoting our attention to the improvement of crops

27484. And to what crops in particular, are you devoting your attention?—We have wheat, rice, cotton, *juar* and other main staple crops. On the chemical side, we have the general problems of the soil. They are also dealt with from the bacteriological point of view. Then we have the diseases of plants which are tackled by our own Mycologist who keeps himself in touch with the other Provinces.

27485. What particular diseases, have you been dealing with at the moment?—We are dealing with sugarcane diseases, palm diseases, smut in *juar*, wheat and so on.

27486. Is your chemist in close touch with the work which is being carried on at Pusa in the matter of what you have described as the general soil problems under the chemical side?—He reads the work that is going on in Pusa in the same way as he reads the account of work done in the other Provinces, and also as he hears and reads the account of work that is going on in America or in Europe or in any other part of the world. Any scientific officer dealing with problems of this sort has to read widely.

27487. Could you tell the Commission whether the Mycologist in this Province is familiar with the work which is being done on the smut diseases of *juar* at this moment in the neighbouring Provinces?—Yes, I believe he is quite familiar.

27488. Do you regard occasional personal visits to the neighbouring institutions as highly desirable?—Any application I make to the Local Government for an officer of my department to visit any other part of India is always dealt with in a very liberal spirit. But I think it is desirable for an officer to visit another part of India with a very definite problem in view and not merely to see things in a general way

27489. Have you anything which you would like to say to the Commission on the question of Pusa's future as a Central Institute for post-graduate training?—We have had a certain amount of experience with men who have undergone post-graduate training at Pusa and my feeling is that perhaps that training is rather narrow. I may perhaps give a concrete illustration. I had an Agricultural Bacteriologist who went to Pusa for training, after having received his preliminary training in Nagpur Agricultural College While at Pusa, he came in contact with one officer in the Chemical Section and one or two officers in the Bacteriologist Section This officer seemed to be a very promising young man and so I proposed to the Local Government to provide him with special facilities and send him to England for training. He was admitted to the Rothamsted Experiment Station for a year. During the time he worked at Rothamsted Experiment Station, he had the opportunity of seeing a large number of people from all over the world who came there. He also attended two meetings of the British Association, one at Rothamsted and the other at Oxford. He also attended a course of lectures at the Cambridge University with a letter of introduction from a friend at Rothamsted. Then he went to France and saw some of the leading bacteriologists there. All this was done in the course of one year and I cannot help thinking that the money we spent on sending that man to England for a year's training was of far greater value than the money spent in sending him to Pusa for a similar period

27490. *Prof. Gangulee* What was his subject?—Agricultural bacteriology.

27491. *The Chairman*: But there had to be some foundation before he was capable of taking advantage of a visit to Rothamsted and the Continent?—He had a very good foundation at Nagpur and I think the foundation we are able to give at Nagpur would be quite sufficient to enable such a man to take every advantage of a training in England. The graduates of the Nagpur University are accepted as such by the Home Universities

27492. At what stage in his career, do you think an Indian should leave India for experience abroad if that is necessary?—I think he should go either to Pusa or abroad when he has shown decided ability in some particular subject. That may be a year after he has graduated or it may be during the course of his graduation It might perhaps be desirable for him to take some kind of refresher course after he has had four or five years' service in a provincial department

27493. Do you think that experience shows it to be a good thing to send a young Indian to Europe immediately after he has graduated?—In the Agricultural Department we have had only a very limited experience of that.

27494. How about study leave later on in a man's career? Do you attach great importance to that?—This particular man about whom I referred just now went on study leave.

27495. *Prof. Gangulee*. Have you got him in service now?—Yes.

27496. Is he in the Imperial grade?—He is in the Provincial grade.

27497. Although he obtained a first class education in bacteriology abroad, he is still in the Provincial grade?—There is no recruitment to the Imperial grade now. We have only the Provincial grade.

27498. *Sir Ganga Ram:* Did you take any guarantee from him when he went abroad that he would return to your service when he came back to India?—He was under no particular contract; he was already in Government service and he had been in Government service for a good many years.

27499. Supposing another Province took him on?—If another Province could offer him better terms and if our Province would allow him to go, he would go.

27500. *The Chairman:* I think you say somewhere in your note that you are anxious to appoint an Agricultural Economist?—I think in answer to Question 4 I have suggested the appointment of a special officer.

27501. I was going to ask you in relation to research whether you would direct him to the carrying out of complete costing operations on units typical of the holdings in this Province?—I think information on the economic side at present is far too meagre and that is really the side on which we now want to specialise.

27502. Would you agree with me that costings of a typical holding is about the only way by which you can arrive at a definite conclusion?—That is the primary way in which the question should be tackled at the start. We have no officer at present who is doing the work of an Economist and I think we should have an Economist just as we are having an Agricultural Chemist or a Bacteriologist or a Botanist.

27503. *Prof. Gangulee:* Where would you train him?—I am afraid at present I can see no facilities for training such a man in India unless he is a man who is kept in a local Agricultural Department and put down on that special work under the general supervision of other officers.

27504 *The Chairman:* I have been looking at your answer to Question 2 (i) where you refer us to Chapter XVI of the "Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar" which has been in the hands of the Members of the Commission for some months. I should like to ask you at the outset what your experience here at the College has been of the inter-action of teaching on research?—Our research workers are responsible for the teaching in other subjects in addition to research work and my own feeling is that in the past they have devoted too great a proportion of their time to the teaching work, to the detriment of the amount of time that they could devote to research work.

27505. That does not mean that teaching has a bad influence on research?—It has no bad influence within limits, but I do not think a research officer ought to be tied down too much to teaching.

27506. Am I right in saying that that is so when the teaching is too elementary and there is too much of it?—That is the thing that happened in my own particular case. When I joined this department as Principal of the Agricultural College I taught general chemistry and inorganic chemistry and also bacteriology. I was also responsible for teaching some physics, and all for the sake of a few students.

27507. Has it been your experience at the Agricultural College that there are certain of your students who do not go in for Government service?—There are a few such men, but up to the present time we have needed Agricultural Assistants so badly that we have taken on almost as many men as we produced.

27508. All the good men?—Yes, all the good men.

27509. Has there been any demand from the public for your students, for the purpose of managing either estates or cattle farms?—There has been very little demand of that kind in the past.

27510. Would you regard it as very important to develop it as much as possible?—It is extremely important to do so.

27511. Especially to encourage the view that the College is something more than a place for training officers?—There will have to be more openings for men who are trained at the Agricultural College. I anticipate that in a few years' time we shall have far more men turned out of the Agricultural College than we can possibly hope to find posts for. We have, at the present time, in the Nagpur Agricutural College, about 110 students, and our recruitment in the near future is not likely to be more than five a year.

27512. *Sir Henry Lawrence:* Are they taken into Government service?—Not now.

27513. *Sir Ganga Ram:* Into the Irrigation Department?—No.

27514. *The Chairman:* Would you like to see the agricultural degree made a qualification for appointments other than in the Agricultural Service?—I should like to see it as a qualification for any service in which a knowledge of agriculture would be valuable.

27515. Have you ever thought of the possibility of founding a degree in agricultural economics, or rural economics to use the wider term?—I should like to make rural economics or agricultural economics such an important subject of agricultural education that it be unnecessary to establish another degree.

27516. You would have one degree in rural economics because rural economics has a much wider field than agricultural economics?—It is wider, but in this country rural economics and agricultural economics are so closely bound up together that one could make a degree in agricultural economics almost wide enough to include both. I think it is important that some of the Indian Universities should realise the value of agricultural or rural economics. I would like to place before you the position which I put forward in this connection in Nagpur a short time ago. I was asked quite unofficially whether I could suggest for the Nagpur University something in the nature of a Chair. I said, 'Why not have a Chair in Rural Economics'; the idea seems to have struck them, and I am hoping that something will come out of it. I think that in a University established in such a prominent agricultural tract as this, a Chair in Rural Economics is of far greater importance than say a lectureship in Sanskrit or something of that sort. The Nagpur University has been newly established, and they have just recognised the Agricultural College as a constituent.

27517. *Dr Hyder*: When a Chair in Rural Economics is established in Nagpur University, it will provide post-graduate training for the students?—The lectures in rural economics would be such as would be valuable and suitable to students taking a degree in general economics or to students in the Agricultural College, because I do feel that the agricultural course wants to be made more and more economic and perhaps a little less scientific. I think we perhaps teach to the general run of our agricultural students rather too much science and too little economics.

27518. Have you looked into the Economics course of the Nagpur University?—No, I have nothing to do with it.

27519. *The Chairman* Your reply is that your college is linked up with the University?—Yes.

27520. You have got your Agricultural College, and you are making at least one experiment in semi-vocational middle schools. Would you agree that it is very important that the future careers of the young men or boys passing through all such institutions should be watched and recorded?—I think it is a matter of the greatest importance.

27521 Is it being done at the moment?—I have supplied the Powarkhera school with a card index and they have to keep a record of each boy who passes through the school, as long as possible.

27522. How long has it been run?—On reorganised lines, for a year; in order to get this information I had got them to collect information regarding past students, recently I have supplied them with this card index, in order to keep a full, detailed account of each student who comes to that school. We have had a few students there, and they have a record of what is happening, but now that the numbers are increasing, I think it is very essential, in order to see the value of this experiment, to keep a complete record of the boys that go through it. That applies to the agricultural middle school at Powarkhera.

27523. In answer to Question 2 (x), you are talking about the problem of making agriculture more attractive to middle class youths, and you say that that may come about when the general conditions of rural life are more attractive and when there is full scope for the energies and abilities of these middle class youths. Do you think it possible that agriculture could be made attractive to middle class youths on holdings as small as those which represent the average in this Province?—I am afraid it is not so.

27524. Is that not really the problem of the smallness of the holdings?—I think it is; the man would make insufficient money to live properly in a village.

27525. Please turn to your answer to Question 3 (*a*). The Commission wish to follow the memorandum on page 41, chapter XIII (pages 14—18 above). Is it your view that the problems of demonstration and propaganda have received

sufficient attention in the past in this Province?—They have received as much attention as we had staff for, but I think the methods of propaganda and demonstration require to be made more attractive and more appealing.

27526. You think that demonstration and propaganda have received as much attention and have enjoyed as much financial support as research?—They have, quite as much as research.

27527. You think there has been a fair allocation between propaganda and demonstration, on the one hand, and research on the other?—It has been quite fair; it is in favour of extension and demonstration.

27528. As between the two types of cultivation, the irrigated (which of course is only a small part in this particular Province) and the dry tracts, has the attention of your department been fairly divided between those two classes of cultivation?—Yes, I think it has been; we are trying to work up to the position of one Agricultural Assistant per tahsil, whether it is in the dry tract or in the irrigated tract; that is our present aim.

27529. No doubt, where irrigation is possible, irrigation is the thing, but there are some districts which cannot be irrigated?—Yes; they have not been neglected. For instance, as far as we can provide the Agricultural Assistants, we place them in the Western Circle for cotton, in the Northern Circle for unirrigated wheat or in the Eastern Circle for sugarcane, rice and so on.

27530. Have you ever noticed the tendency or temptation to devote more attention to the irrigated areas than to the dry ones?—Not in this Province.

27531. We were talking about field demonstrations a little while ago, and in answer to Question 3 (*b*), you go a little more into detail about your demonstrations and how you carry them out. How about the class from which your demonstrators are drawn; are they from the rural class, as a rule?—They are from the rural class, but one must realise that in the Agricultural College in the past we have admitted non-matriculates, and I suppose we are the only department who have taken a non-matriculate, given him training at a fairly cheap rate, and provided him with a post on Rs. 50 a month. We are still taking them, although we hope to improve the standard, now that degrees in agriculture are available.

27532. Is not the training of your demonstrators mainly technical?—The demonstrators are either given the short course at the Agricultural College, which is largely agriculture or the long course, but it is our policy not to put a man out on demonstration in the district until he has had at least two years' further training in agriculture on one of our farms.

27533. What object have you in view in making that rule?—Because we do not think that he is a sufficiently good agriculturist to be trusted to go out and advise people on the basis of two years' training.

27534. The two years' training gives him technical knowledge; does he acquire any commercial knowledge and knowledge of management?—It gives him technical knowledge, but not experience; he has two seasons on the Nagpur College farm, but they may be the same, or they may be different, and that is not quite sufficient basis upon which to turn that man loose on the agricultural public as an adviser.

27535. You would agree that some knowledge of farm management is essential in the case of a demonstrator?—Yes, and it is for that reason that we keep him on one of our farms. I have had the case of a man put out on demonstration duty after a short period of training, who has begged me to take him back and put him on a farm, because he did not feel he was up to his job. From that may be realised, perhaps more than from anything else, the need for giving those men a larger practical training before allowing them to become general advisers.

27536. If a cultivator discovers that a demonstrator, representing the department in his area, does not know the things about farm management which the cultivator has learnt from his father, does he not think the demonstrator a fool?—Exactly; there is an erroneous difference between the influence of the man who knows his job well and the man who does not.

27537. Are you satisfied with the manner in which the records of past experience are being kept in your department in this Province?—I think, taking the officers of the department as a whole, they all have too much to do, and that is one of the reasons why I have suggested that we want a Statistician and an Economist, who would take up some of the work of keeping the records.

27538. I am not thinking at the moment of the interpretation of results, but merely of the machinery for recording experience. Men come and go, and unless pains are taken to record experience, whether it is one of success or failure, it is likely to be lost?—There is a danger of losing experience; there is that distinct danger, particularly if you have a man breeding crops; if that man does not keep a well written account of the history of the crop you may produce a new variety and you do not know the history at all. There is that danger. In general, I think, the annual reports regarding the use of various things are kept; but there are personal touches which should be recorded also and which are of extreme value.

27539. There is nothing at the present moment in any of the Provinces of India comparable to the Ministry of Agriculture at Home?—No.

27540. I take it that the administrative records are all in the Secretariat?—The annual reports are all filed.

27541. The experience on the administrative side is kept by the Secretariat and not by you; is it not?—The Secretariat keeps the annual reports on the working of the department. Each office keeps its own files, the annual reports of these experimental farms, demonstration farms, extension work and so on.

27542. Let us take a concrete case which has emerged in another Province. Are you attempting to popularise the method of preserving fodder by making it into silage?—We are, yes.

27543. For how long is that going on?—It has only been going on for the last one or two years.

27544. You agree that that is the sort of experiment of which the most closely kept records should be preserved?—Yes.

27545. Would you put in a paper summarising the efforts that have been made and the results so far obtained in that direction?—Yes; shall I send it to Nagpur?

27546. There is no hurry; but if you can do so it would give an opportunity to the Commission of asking some of the witnesses about it?—Yes.

27547. I see that you say, "There is also a need for a Bureau to summarise the work already done in the Central Provinces and to maintain such a summary in future years. This could be maintained by the Central Government". Why do you invoke the Central Government for that particular purpose?—I say it could be maintained by the Central Government because the Central Government or the central organisation could collect all the material from all Provinces.

27548. Is that so as to bring it together for the purpose of comparison?—And make it available to any one who wanted it.

27549. Does that suggest to your mind that there is not quite the degree of co-ordination and communication today which you suggested in your evidence some minutes ago?—The material is available.

27550. It is not at the moment at the disposal of the Provinces?—If any particular officer wants information on any point, he could always write to another Province to the officer in charge of the work and get it; it is not publicly available.

27551. Now in answer to Question 4 (*c*) (ii) you say, "The present regulations regarding railway rates for the transport of agricultural produce, machinery and other requirements need to be closely examined", and then you give a specific instance. What representations have been made by your department, to whom and with what result?—As far as I know, no departmental representation has been made on the question of the sugarcane mills. That has been shown me as a most important hardship. With regard to oil-cakes, I think that was done some years ago when we wanted oil-cakes to be carried at a uniform rate.

27552. What body representing the Railway is existing in this Province to listen to the complaints of the cultivators?—There is an Advisory Board for the G. I. P. Railway.

27553. Is that the Local Advisory Council?—Yes, at Nagpur.

27554. Instituted as the result of the Acworth Committee of 1920?—Yes. I am unaware of any definite complaints from agriculturists having reached them.

27555. You probably agree that in the present state of development, the Indian cultivator is in no position to carry his complaints to the Railway Companies?—I am afraid he is not.

27556. *Mr. Kamat:* Have the manufacturers of these sugarcane mills represented their grievance?—Not that I know of.

27557. Have you got local manufacturers?—No.

27558. *The Chairman:* Following on your answer to me, would you agree that that fact makes it more important that the Department of Agriculture should watch the interests of agriculturists in these matters?—We do try and watch the interests of the cultivator. When the cultivator has a point of this kind to bring forward I would say the Provincial Board of Agriculture, the Advisory Board in Agriculture, is of increasing value. It acts as the Standing Committee in agricultural matters to the Local Government. For example, no new proposal to be included in the budget is accepted by the Local Government unless it has been passed by this Advisory Board which consists largely of non-official members representative of the different agricultural tracts, and a certain number of official members.

27559. *Sir Ganga Ram*. Are they members of the Council?—Some of them may be Council members, but not all.

27560. *The Chairman:* The heads of the Railways when they were asked about the interests of the cultivator have cited the Local Advisory Councils and indeed they told us precisely how the representation of the cultivators' interests has been arranged for It was, if my memory does not deceive me, by two members of the local Legislative Council chosen, I think, from rural areas. Would it not be worth while that your department should look into the possibility of assuring for the cultivator an active representation on the Railway Local Advisory Committee?—I think that could be taken up with more chance of success by the Advisory Board of Agriculture.

27561. As head of the department, do you put up suggestions of that sort to the Advisory Board?—Yes; if there is a matter of that sort, it is put up.

27562. How about construction; are you satisfied with the amount of railway construction going on in the Province as a whole?—Yes; I think the railway provision in this Province is, on the whole, very satisfactory.

27563. In answer to our Question 4, you deal with various points subsequent to those with which we have already dealt. But I see that you say nothing about the Post Office. I was wondering whether you regard the service of the Post Office, in its capacity as public agent for the Savings Bank system, as giving it importance in relation to agriculture?—No; I had not anything definite to say about the Post Office.

27564. Now, I am looking at your answer on page 28 to Question 6 (*a*), (*b*) and (*c*) and to the Provincial Memorandum, paragraph 45 (page 6 above). You say, "There is considerable scope for giving assistance to the cultivator through such financing agencies as land mortgage banks". You suggest also 'a whole-time officer who could specialise in the subject'. Would that be a whole-time officer for the whole Province?—That was my intention, yes.

27565. Do you think that one whole-time officer for the whole Province could do much? Is it a question of research which was in your mind?—The question of organisation and the preparation and development of schemes for this work, a man who would make a special study of the financing of agriculturists.

27566. Do you think sufficiently detailed investigation of the problem of indebtedness has been carried out in the Province?—I do not know; I think it requires far more investigation.

27567. Is there any statement available showing the particulars of debt, secured and unsecured debt to moneylenders, debt to co-operative societies and so on?—Not that I know of.

27568. Are you one of those who attach great importance to the carrying out of preliminary surveys before laying down a policy?—I think this question of indebtedness does require a very close investigation.

27569. You do not suggest, do you, that one officer for the whole Province could make much contribution towards an investigation of that sort?—No, but that is a step in the right direction.

27570. I turn to the note* which is headed "Note relating to the Acts in force in the Central Provinces and Berar which affect agricultural matters from the economic point of view." Pages 3 and 4 deal with the Agriculturists' Loans Act No. 13 of 1884 and with the Lands Improvement Loans Act; on page 4,

*Not printed.

second paragraph, you say, "Government has also recently sanctioned as an experimental measure a scheme for the supply of pure wheat seed on the *barhi* system". Is that under the Act of 1884?—No. I am not responsible for that note; that was drawn up by the Secretariat.

27571. Have you not seen it?—I have had a copy of it.

27572. Perhaps you will give me the facts as far as you are aware of them?—That was a special scheme started last year and does not, I think, have any reference to that Act you quote.

27573. So far as you know, it is neither under the Act of 1884 nor under the subsequent Agriculturists' Loans Act?—Speaking from memory, I do not think so, but it was only started just before I went on leave and I have not seen the details of the working of it.

27574. What is the *barhi* system?—It is the giving out of loans with a return of 25 per cent interest in kind.

27575. As you are not responsible for this paper, you must stop me if you do not want to answer any question; but it touches your responsibility I think closely in many respects, and so I will take you as far as you are prepared to go. The writer is talking about interest on loans under the Agriculturists' and Lands Improvement Loans Acts and he is dealing with the question of the interest charged to the cultivator. "During 1921-22 the interest was raised from $6\frac{1}{4}$ per cent per annum to $7\frac{13}{16}$ per cent, or 1 anna 3 pies in a rupee, in order to cover the high rate of interest payable by the Local Government to the Government of India at the time, and also to protect the provincial finances from probable losses owing to bad debts. At present the rate from Provincial Loans Fund is fixed at 5 per cent, but there has been no reduction in the rate of interest charged to the cultivator." Are you familiar with the circumstances?—No.

27576. Then I observe it is the practice in this Province to remit interest on *taccavi* instalments whenever land revenue is remitted?—Yes, that is probably the case, but really it is not a thing with which the Agricultural Department has any concern.

27577. Have you not interested yourself in the general problem of dealing with the indebtedness of the cultivator?—We are interested in the issue of *taccavi* loan but not in the general regulations covering it.

27578. Now I turn to Question 8, which deals with Irrigation. Are you satisfied with the degree of touch and inter-communication existing between your department and the Irrigation Department?—Yes.

27579. Are relations thoroughly amicable?—We are in constant communication, either by letter or by oral discussion. I can give an example which happened only quite recently: the Irrigation Department found that the water from one of their tanks was not being taken up quite as readily as they had hoped, and they asked us if we could open a demonstration plot. We opened one within a fortnight in that area. We do a great deal by discussion; I see the Chief Engineer very very frequently and I am also in close touch with the Superintending Engineers as well.

27580. I suppose you also meet on the Provincial Board of Agriculture?—The Chief Engineer is a member of the Advisory Board for Agriculture.

27581. How often does the Advisory Board meet?—It meets two or three times a year to discuss the budget items, and at one other time at least.

27582. How about the advice that the two departments give to cultivators? Are you agreed together as departments in the matter of the quantity of water required for sugarcane growing?—Well, we have our views; in a general way I should say the Agricultural Department would put rather a lower figure for water required for sugarcane than the Irrigation Department.

27583. I think that is quite possible?—Yes.

27584. *Prof. Gangulee:* You have no experimental data with regard to that point?—Experiments have been conducted and are now going on with regard to the duty of water for various crops.

27585. When was that experiment begun?—That was started by the Irrigation Department two or three years ago in consultation with the officers of the Agricultural Department; the experiments have been opened by the Irrigation Department.

27586. *The Chairman:* Have you anything that you wish to tell the Commission on the problem of the method of charging for water; that is to say, the volumetric *versus* the acreage basis?—No, except that we are frequently consulted over irrigation rates.

27587. Have you nothing to say about the volumetric method of charging?—No.

27588. Do you think there is an opening for minor irrigation schemes in the Province: such as *kutcha* damming of minor streams and rivers?—I think there is scope for minor irrigation schemes and also for well irrigation; the trouble is to make such schemes remunerative and to pay the interest on the capital involved in damming up such streams.

27589. Are there no districts where cultivators are willing to do the work and to take risk if they are given sufficiently good advice; is there any officer available to advise cultivators?—The general officers in the Agricultural Department would advise on matters of that sort.

27590. But you have no special irrigation officer to advise on such schemes?—No.

27591. Do you not think such an officer could do good service?—It should be one of the duties of the Agricultural Engineer to advise where *bunding* and levelling of land, setting up of irrigation plant, and so on, should be; but as a rule that kind of advice is given by the general officers of the Agricultural Department.

27592. Then I think you somewhere express the view that irrigation by wells is a subject which should receive further attention; is that so?—Yes.

27593. You think there may be an important opening for that, do you not?—I do, but I think the whole question of water-supply by wells is too big a thing to put in the hands of a solitary agricultural engineer.

27594. Do you not think that both these subjects are subjects which should be in the hands of technical whole-time officers?—The minor irrigation schemes, that is to say, the building of small tanks and so on, could well come within the scope of the duties of the agricultural officer, I think, if he could call in technical advice where wanted.

27595. Are you satisfied that there are not problems in research of a fundamental nature in connection with irrigated agriculture which still require to be dealt with?—I think there are problems in connection with irrigated crops, special problems of their own, but these I think could come in under the general survey of the Agricultural Department.

27596. Problems in connection with drainage in relation to agriculture, drainage in connection with irrigation, and problems in connection with irrigation in its bearing upon health and its effect upon the soil, problems of water-logging and so on; do you think that these might well be tackled by a central research station for irrigation under the Government of India?—I do not think that problems of such a nature are very pressing and important in this Province.

27597. Has there been any soil survey carried out in this Province?—Not of a general nature, but we have accumulated a good deal of information on soils as a whole. There has not, however, been any organised soil survey because we have not got the necessary staff for it.

27598. Are you going slowly forward with that work?—Yes, we are gradually collecting more and more information. For instance, at agricultural shows we put up show bottles giving results of the analysis of the soils in a particular area and showing how they differ. We use those as exhibits at agricultural shows.

27599. In answer to Question 9 (*b*) (ii) and (*c*), you give an account of what you have done in the way of clearing land of *kans* grass. How far have these opportunities been taken advantage of by cultivators?—We have two schemes, ploughing with bullock-drawn ploughs for which there is a pretty big demand. We have extended that scheme in the last year and it seems to be a scheme which could be developed almost indefinitely.

27600. What plough are you using for that?—Sometimes the iron turn-wrest plough, sometimes the Sabul plough.

27601. Does the turn-wrest require to be altered so as to adapt it for that work?—No, that plough is available; it is the plough with which we do the work to a large extent.

27602. Then you have got this steam-ploughing plant?—Yes, that has only just been started.

27603. What plough are you using?—It is a four or five bottom plough.

27604. *Sir Ganga Ram:* Is it a double engine?—Yes. It was sanctioned by the Legislative Council during the last budget session and is working for the first season now in the Jubbulpore district.

27605. *The Chairman:* Do I understand that the system was sanctioned by the Legislative Council?—The money was sanctioned by the Council. It was put down as a special item in the budget as one of the items of new expenditure really, after the scheme had been exhaustively discussed by the Advisory Board of Agriculture.

27606. Do you have to present your budget in very great detail to the Council?—In very great detail and very frequently. We have to explain it very thoroughly on many occasions. I first of all have to explain it to the Advisory Board, who may or may not approve of it. Provided it is approved by the Advisory Board, it has then to be explained to the Administrative Department. It probably has to be explained again to the Finance Department, then to the Finance Sub-Committee, and finally probably in a fairly lengthy speech to the Legislative Council.

27607. *Sir Henry Lawrence:* Has the Director of the department no discretion to use his money in introducing new machinery?—Items of new expenditure always have to be approved by the Advisory Board of Agriculture.

27608. *The Chairman:* In detail?—Yes, item by item. I find the Advisory Board of Agriculture extremely useful in that way, because once we have satisfied them that the scheme is a sound one agriculturally, it is of very great assistance to have their support.

27609. *Mr. Calvert* Are they all members of the Legislative Council?—Not all.

27610. *The Chairman.* Now, in answer to Question 10 on Fertilisers, you say that greater use can undoubtedly be made of natural manures and artificial fertilisers. Do you think the trouble is ignorance or apathy on the part of the cultivator, or difficulty of financing these operations?—I think the whole question is economic. It is very difficult to say that some of the more expensive fertilisers can be recommended for various crops. Although, at the outset when applied to the crop, they apparently give a good yield and look like being a profitable investment, later on we do not find that to be the case.

27611. What is your limiting factor in the Province as a whole?—I should say that nitrogen was the important factor.

27612. *Prof. Gangulee:* Nitrogen is an important factor?—Yes, and water also.

27613. *The Chairman:* What experiments are you carrying on at this moment in compost making?—Particularly in the rice areas we try to use leaves and trash. Of course, in the dry areas the material is not available.

27614. Is that a direction in which you think more research work is required?—I think the whole question of manuring is one in which a great deal of research work is required but it must always be bound up with the economic question.

27615. Are you an advocate of any particular method of compost making at the moment through your propaganda officers?—In the north of the Province they advocate compost making with all the weeds and general material collected off the fields. We also carried out a certain number of experiments in trying to make artificial manure but we found that the trouble there was to maintain a suitable moisture.

27616. What substance were you using?—*Sann* hemp, refuse grasses, cotton stalks and the like. Again we have been doing it on the Rothamsted method We found that it was very difficult to keep the manure wet except in the rains but to rot it in the dry weather was impossible.

27617. Have you any views on the export of bones from the Province?—I should be very glad to see not only bones but also oil-cakes retained in the Province, if possible. Oil-cake, I think, is more important than bones.

27618. How would you use your bone?—Chiefly on the irrigated rice areas.

27619. And process it?—I would grind it up.

27620 Do you not think that they require treatment?—No. It is used in the form of ground bones.

27621. *Prof Gangulee:* Using a very fine mesh?—Yes.

27622 *The Chairman:* Have you studied the economics of the problem of preventing or not preventing the export of bones?—Not in detail.

27623. Is it your view that the damage done by the use of cowdung for fuel is exaggerated or do you regard it as very serious?—I regard it as very serious.

27624. On page 26, paragraph 67, of the Provincial Memorandum (page 9 above) you say that in the Chhattisgarh Division attempts have been made to encourage the use of firewood as fuel by the establishment of fuel depôts at suitable agricultural centres. How are those depôts supplied? Where do they get the wood from?—From the surrounding jungles.

27625 How could the cultivators get it direct?—The depôts were established in Chhattisgarh but the jungles are a considerable distance from the cultivated areas.

27626 So that it is really supplying wood, not from jungles round about, but from distant jungles?—Yes. And for that reason they hope, with the development of the railways through this district, to be able to get firewood from the jungle at a rate much cheaper than has been possible in the past; it is probable that this scheme will be feasible in the future although it was not a success when it was tried before.

27627. But although the fuel was offered at what is described in this note as being very cheap rates, the immemorial custom of, and the preference for, cowdung fuel prevented the change over from that fuel to wood?—Yes.

27628. For how long was this experiment persisted in?—I am not sure because this was carried out by the Forest Department, it was not done by the Agricultural Department. I think the Chief Conservator of Forests would help you in this matter.

27629. Now under the heading, Crops, Question 11, have you witnessed a change over from food crops to money crops on an important scale in any area in this Province? You do not deal with this question in your note?—There has been a great increase in the cotton area in the last few years. That is one example.

27630. And has it reached a point where an important proportion of the cultivators do not grow sufficient food for their own family use and have to purchase?—I think so. It has reached a point where the pendulum is now swinging in the other direction.

27631. Before we come to that I want to ask you whether you applied yourself at the time when this change over was going on, to discovering what effect the change had upon the cultivator and the economics of his everyday life, while cotton was bringing in a good price? Was it to the advantage of the cultivator to have a change over to the money crop, do you think?—I think it was, while the price remained high.

27632. For the cultivator to get the benefit of the change over it is necessary for him to be able not merely to sell his cotton well, but also to buy the necessities of life that he requires and to buy them well?—Yes.

27633. And in that respect good communications are as important in keeping down the prices of commodities as they are in affording ready channels of marketing for the produce?—Yes.

27634. Do you think it likely that in areas away from large centres and badly served by communications, the cultivator would be able to buy what he requires reasonably cheap?—I think the communications in this Province are, both by rail and by road, good enough to ensure that.

27635. Do you think there is a marked rise in the standard of living amongst the population the members of which change over from food to money crops so long as the price remains high?—I should not say there was a rise in the standard of living. I should say there was a rise in general expenditure.

27636. You mean to say it was not good spending?—It was not spending to the best advantage.

27637. What was the money spent on as a rule? Was it spent on putting tin roofs on the houses?—I should think it was spent probably on getting out of debt.

27638. That seems to me a very good object?—Yes, but there has not been a definite rise in the standard of living

27639. *Prof. Gangulee:* Is there any sign of prosperity?—In the cotton tract when the price of cotton was high, there were signs of prosperity.

27640. *The Chairman* Then you say that the pendulum is now swinging back and that the land which has been under money crops is now going back to food crops. Is that very marked?—It is just beginning because the price of cotton now is dropping. We find that a good many people are now taking to ground-nut in place of cotton

27641. Is ground-nut a food crop of any importance in this Province?—It is not a staple food.

27642. You would not surely describe the change over from cotton to ground-nut as typical of reversion from money to food crops?—It is not exactly a food crop but they are reverting to a rotation of crops which would be to the advantage of the cultivator and of the soil.

27643. Will you give us a little more information about your machinery for distributing seed? I understand that you have an agreement with reliable cultivators throughout the Province?—We have a number of seed farms carried on by reliable cultivators.

27644. How do you reward these seed multipliers?—We do not reward them in any way, they establish a reputation for their seed. I have described the system in paragraph 88 of my memorandum (page 10 above).

27645. Are you satisfied with this system?—I am satisfied with the system, provided we can get sufficient controlling staff.

27646. Do you think you have a fairly accurate record of the total acreage under improved varieties?—The records are all right as far as the seed which is distributed directly under the departmental agency is concerned; but we cannot keep very accurate records of further extensions beyond that.

27647. Do you think there is any hope of establishing in this country, on a commercial basis, the same system of distributing seed as we have at Home?—I think there should be. I think the present seed farmers are enterprising businessmen and they might be able to establish a reputation as seed farmers.

27648. The danger is that they might deteriorate and become first moneylenders and seed merchants afterwards?—Unfortunately the moneylending business and seed business do rather go together.

27649. To what extent are you using the co-operative organisation for distributing improved seeds?—Some of our organisations, more particularly in the cotton tract, are combined co-operative and seed-producing agencies.

27650. Are you using the co-operative organisation as a whole for propaganda purposes?—We work with the Co-operative Department.

27651. Are you satisfied that you have exploited that field to the utmost?—Not to the utmost, but I think we are trying to work together more and more. For example, when there are co-operative rallies of the Co-operative Department we ask our agricultural officers to go to these rallies and deliver lectures and try to use some scheme for propaganda work. When you have an audience of any kind which is being addressed on agricultural matters, that audience can be addressed on co-operative matters and *vice versa*. Under the scheme that I wish to push through, namely, demonstration lorries and making demonstration work more popular, those things will be at the disposal of the Co-operative Department just as they are at the disposal of the Agricultural Department.

MR. F. J. PLYMEN.

27652. I wanted to ask you a point regarding these lorries. Are they going to be used as travelling cinemas?—Yes.

27653. Who is to prepare the films?—It all depends whether they are full-sized films or smaller films. If they are full-sized films, we shall have to draw on professional film-makers. The G. I. P. Railway has been making a certain number of films under our direction showing, for instance, cotton, animal husbandry and various things of that sort. They have been doing it in other parts of India also. I understand they would be willing to let us have copies of these films on specially favourable terms.

27654. Do you think that their technical staff is sufficiently good for your purposes?—I realise that is a very highly technical business.

27655. Have you seen the films prepared by the G. I. P. Railway?—I have not seen them yet; they are bringing them up to Nagpur in a day or two.

27656. Would you agree that a bad film, although very expensive, is quite useless?—Yes.

27657. Would you agree that the production of films for propaganda work is a highly technical business?—It is. The films that have been produced in the Central Provinces have been produced in conjunction with the officers of the Agricultural Department They are just being completed.

27658. Talking about demonstration and propaganda, do you think that there is an increasing demand by the cultivator himself for the services of the Agricultural Department?—I do

27659. Is he beginning to take his problem for solution to the Agricultural Department?—He is beginning to seek the assistance of the Agricultural Department. It is rather difficult for him sometimes to clearly define what his problem is.

27660. In answer to Question 13 (1) on page 30, you set down the view that the arrangements for preventing the introduction of dangerous plant pests into India might be more effective and you cite an instance from your own personal knowledge where live insects in a consignment of plants from abroad were discovered by yourself after those plants had been subjected to disinfection and so on. What insects were they?—They were caterpillars.

27661. They were not Indian caterpillars?—Presumably not. They were in the plants themselves, all wrapped up I do not think Indian caterpillars could have got into them. I do not think the material was opened up for disinfection. It struck me that the thing was not disinfected at all.

27662. I understand that an Indian goods train affords ample opportunities for caterpillars to climb aboard?—These particular plants arrived apparently in the state in which they were packed up.

27663. Do you suggest that on the recommendation of the Director of Agriculture specimens should be allowed in without further investigation or fumigation?—Yes. He will have technical staff to examine them at once when they come in and they will be examined both from the mycological and entomological point of view.

27664. Do you think that Provinces intermediate between the port of entry and the Province in question might have a word to say on that? Do you not think it is an important point because after all the principle of Imperial responsibility for the prevention of crop pests and other agricultural pests is well established in this country, and indeed in many other countries where, either under a federal system or a system akin to federal systems, the Central Government's responsibility for these matters has been recognised?—I would welcome any system that was efficient and short, but it is clearly no good importing plants when they take so long to reach us.

27665. Have you water-hyacinth in the Province?—Very little.

27666. I see that you say that water-hyacinth should be a notifiable pest and that its destruction should be made compulsory. On whom should it be made compulsory?—On the person in whose area it is growing.

27667. Have you been to Bengal lately?—No.

27668. If you had been there you would agree that the life of the cultivator would be very busy if you laid upon him this responsibility?—I know that water-hyacinth has become a pest in some places.

27669. Have you anything to say on the problem of veterinary teaching?—No.

27670. Have you anything to say on the question whether District Boards should or should not continue to be responsible for the veterinary service in their districts?—I have nothing to say on the subject.

27671. Looking at your answer on page 31 to our Question 16 (*a*) (ii) on Animal Husbandry, is dairying in this Province under the Deputy Director in charge of Animal Husbandry?—Yes, except at the Agricultural College, which is directly under the Principal of the Agricultural College.

27672. Take the supply of milk for the urban centres; how is Nagpur provided with milk?—It is largely provided by *gowalas*, but we have one co-operative dairy there which supplies a certain amount of milk.

27673. Is the milk at Nagpur supplied from buffaloes or cows?—Mainly from buffaloes; the buffalo is the chief milch animal; of course, there is a good deal of prejudice against the use of buffalo milk in certain cases.

27674. Is there a prejudice amongst Indians against buffalo milk?—In many cases the milk of the cow is preferred, buffalo milk being reserved for the *ghi*-making industry.

27675. Is it not rather because buffalo milk provides better *ghi* for cooking purposes?—I think that is it; it provides more fat

27676. Are there any cross-bred herds, cross-bred between Indian and European breeds, providing milk for Nagpur?—The Telinkheri farm has a herd of Montgomery cattle; at the College dairy we have a number of cross-breds, but apart from Nagpur itself there is very little going on in dairying.

27677. Does the co-operative organisation that you mentioned a moment ago have a pure Indian herd; and if not, what breeds does it possess?—It has a pure Indian herd, and a herd of buffaloes. We supply breeding bulls from the Montgomery herd.

27678. Do they actually own the cows that produce the milk?—Yes; the individual member of the association owns his own cows.

27679. Do you regard the problem of the improvement of cattle in this Province as one of the major problems before you?—I think so; that is why we have a man on special duty for it.

27680. How long has he been on special duty?—About four years.

27681. We have been provided with a monograph of all that you are doing on the subject of improving the breeds, and the officer responsible for cattle-breeding will no doubt appear before us; I think he is coming before us as a witness?—No; he will be there, when you visit the farm under his charge.

27682. Is he also charged with the problem of improving the food supply of the cattle?—He is concerned with the growing of fodder crops and the trials of fodder crops; I have recently also put a certain amount of work of that kind under the Second Economic Botanist, who is dealing with grasses.

27683. What hope do you think there is of persuading cultivators to grow these fodder crops if you could work them out and recommend a particular grass?—I think, if the proposition is economically sound, one has every hope of getting the cultivator to take it up.

27684. Do you yourself think that silage offers good hope as a partial solution of the problem?—Silage is a problem which wants very careful investigation. It is not easy to convince people that to cut a crop of *juar* green and put it in a silo is a better proposition than allowing the crop to ripen and providing the grain for human consumption and the dry stalk for the cattle.

27685. You think that both the economic and the technical side require very careful investigation?—It is not a thing which one can recommend off-hand for general adoption.

27686. You do not think that enough work has been done on it?—No.

27687. Do the cultivators in this Province to any considerable extent consume dairy produce provided by their own animals?—Yes.

27688. They drink milk?—Yes, when they can get it.

27689. They consume *ghi*?—Yes.

27690. On the whole, would you say that physically they are well developed and healthy?—In certain tracts, they are fairly well developed.

27691. Do you associate the consumption of dairy produce with those districts in which their physical condition is the best?—I should say that the people are better developed where the general standard of living is high.

27692. And the consumption of dairy produce is usually high where the standard of living is high?—I should say so.

27693. The poorer peasant is sometimes compelled to market his milk?—Frequently, he has no milk to market.

27694. *Prof. Gangulee:* In which tract is the standard of living higher?—In the Berar tract, the cotton tract, where there is more money.

27695. *The Chairman.* Have you considered the proposal to remit the revenue or part of the revenue on land used for growing fodder crops?—I do not think that has been considered; as far as I am concerned, the proposition has never come up.

27696. Do you know anything about hydro-electric surveys in this Province?—I think the Irrigation Department will supply a note on that; I do not believe it was ever considered to be a favourable Province for the development of hydro-electric works.

27697. You are doing a certain amount of research work on vegetable and fruit growing?—Yes, but that is a line which has come under reduction. At one time we had a European gardener, but the post has been abolished and really now it is part-time work.

27698. One has not only to grow the fruits, but also to sell them; how about the markets? Have they been studied at all?—Do you mean the co-operative marketing of fruits?

27699. No, the markets themselves, selling the fruit through co-operative organisations or in the ordinary way. What about the demand?—The demand for fruits and vegetables is very considerable.

27700. Is that for tropical fruit?—Yes.

27701. Have you any area in which you can grow temperate fruit?—Not on a successful scale; we have a very big demand for tropical fruit.

27702. Who is in charge of lac culture?—The Forest Department.

27703. Is it within your knowledge whether they have taken an active interest in it?—Yes, they have I have a sort of general knowledge of what goes on. For instance, when the Director of Agriculture, Bengal, wanted me to supply him with seed lac, I was able to put him in touch with the people who could meet his requirements; that is the only sort of knowledge we have.

27704. I observe that you attach importance to economic surveys of particular villages as a preliminary to framing a policy?—Yes; it is very hard to add that work on to the ordinary duties of the Deputy Director of Agriculture.

27705. Have you anything to say about the possibility of developing the panchayat in the villages in this Province?—So far as agriculture is concerned, I think local agricultural associations would do that better than panchayat.

27706. That is your local association?—The sub-circle association is the local association.

27707. You have nothing in the nature of Taluka Associations?—We have the Taluka Association; we have the District Association and under that we have Taluka Association, and under that we have the sub-circle association.

27708. The District Association is the largest?—Yes.

27709. And which comes next to that?—The Taluka Association, which supplies a few members to the District Association, and under that we have the sub-circle association. We can eventually, when the importance of such associations is established, get down to the village association.

27710. What is the smallest official or semi-official administrative body in the Province?—The Tahsildar in charge of the tahsil; we have below him the Revenue Inspector.

27711. Which is the smallest corporate administrative body?—I suppose one would call the panchayat the smallest.

27712. Is the panchayat established under a particular Act?—I think Mr. Wills will be able to give you better information on the point.

Mr. Wills: There is a Panchayat Act, giving them power to tax themselves. The panchayat is constituted for administrative purposes, and they have a certain amount of judicial power.

27713. *The Chairman:* You have nothing in connection with agriculture?—We do not go down as far as the panchayat. With Agricultural Associations, a group of villages is the smallest unit we have at present.

27714. You have provided us with a note on the consolidation of holdings?—I think that is Mr. Dyer's note.

27715. Would you rather not speak to it?—Not, except in a general way; as a department we are not actually concerned with the consolidation of holdings.

27716. Agriculturally, you attach importance to consolidation?—Yes

27717. Would you agree that the village being the unit for consolidation, the panchayat might have a very important agricultural bearing?—I would; we are interested in the consolidation of holdings in a similar way to the Irrigation Department, that is, for the improvement of irrigation or agriculture, but it is never carried out under the organisation of the Agricultural Department.

27718. Are you satisfied with the touch between yourself and the head of the Forest Department?—Yes. I should like to emphasise the fact that the forests should, I think, be utilised for definite agricultural purposes where feasible schemes can be put forward. For instance, in the starting of cattle-breeding schemes, if a forest area is required for a cattle-breeding farm, it will do more good to the cultivators as a whole than if that area, which may amount to 2 or 3 square miles, is reserved entirely for the supply of timber and grass.

27719. How about the production of dry fodder or hay from the Forest Department? Do you think more might be done in that direction?—I think so, provided the supply is available within reasonable distance.

27720. Or, I suppose, within reasonable distance of a good distributing centre?—Yes; but the supply of dry grass would scarcely be extensive, on account of the overhead charges for rural distribution.

27721. Not even in times of fodder famine?—In times of fodder famine the position changes; that is why one wants, as I have suggested, the storing up of grass.

27722. Is there any reserve of fodder against a fodder famine at the moment controlled by you?—No.

27723. Would you like to see that established?—I should like to see it established, but I do not think it necessarily need be controlled by the Agricultural Department, because the Agricultural Department is not very closely concerned with it; in times of fodder scarcity, the revenue authority takes it up.

27724. I should have thought that few things touch the interests of the Agricultural Department more closely than preserving the life of the cultivators' cattle in times of fodder famine?—The Agricultural Department is concerned with it; but it touches the revenue officer very closely too, and also the forest officer. It might be necessary to bring it under the Agricultural Department if it was not looked after very carefully by the revenue officer.

27725. Do you think that young officers of the Forest Department have a sufficiently sympathetic interest in the cultivators' problem?—Yes, I think so. What we have been doing in recent years in Nagpur is to have young officers of various departments (the forest officer did not come, I think) together, during the rains, for a course of lectures on the general outlines of rural economy, and some of the lectures have been given by agricultural officers.

27726. What do you say to a scheme of attaching young forest officers to the Agricultural Department and placing them in districts where cultivation is contiguous to forest areas for a short period?—I do not think that would be necessary provided he was in close touch with the local agricultural officer.

27727. Do you not think that such a scheme might bring in a more understanding attitude on the part of the forest officer?—I think if he is in close touch with the agricultural officer he will pick up the information he requires.

27728. Do you see anything against the scheme?—No; I do not see anything against the scheme.

Sir Henry Lawrence: Are the officers who attend these lectures officers of the Revenue Department?—Mostly of the Revenue Department.

27729. Provincial or Imperial?—Some Provincial and some Imperial; the lectures are given by agricultural officers, veterinary officers, forest officers, irrigation officers and it is a revenue officer, the Commissioner of Settlements, who conducts the courses.

27730 *The Chairman:* Do you think there is much prospect of encouraging cultivators to plant shrubs or trees for their future requirements?—I am afraid it will be difficult to get the cultivator to do it.

27731. Difficulty not only of planting but also of protection during the young stage?—Yes; even if one man brings them up carefully another man may destroy them.

27732. I understand that the memorandum on marketing which you promised in answer to Question 20 (*a*), (*b*) and (*c*) is not yet forthcoming?—I find some material that you have in this memorandum was taken out of it; but there is a good deal more which has still to be digested and I hope to let you have that before you leave Nagpur. Of course it does not touch cotton marketing; that has been dealt with specially by the cotton people.

27733. Turning to page 10 of the Provincial Memorandum (page 3 above) have you studied the control of the cotton markets?—I have seen a good deal of it while I was Deputy Director of the Western Circle.

27734. Do you think they are satisfactory?—In theory, but not in practice.

27735. I understand there has been recently a committee of the Indian Central Cotton Committee enquiring into the working of these cotton markets, which committee has not yet reported; is that so?—I have not yet seen any final findings The question, I know, is still under consideration.

27736. Have you ever heard the charge levelled against these markets that it is possible for cotton to pass through the market and to be sold subsequently?—I have seen cotton being passed straight through the market without any business being done. Cotton passes from one gate to the other, while the business with regard to its sale is transacted at some other place entirely away from the market.

27737. That is even a simpler process than the one I was trying to describe. I thought they had a sham sale in the market and a real sale elsewhere?—No.

27738. Why do they bother to send it through and pay the fee?—I could not say why; under the market rules perhaps it has to pass through the market.

27739. Probably we had better wait till we get the report of that committee?—Yes.

27740. Have you ever considered the advisability of recommending the licensing of commission agents?—That is a matter for local self-governing bodies.

27741. You have no views on that point?—I think they certainly should be licensed. These commission agents should be brought under very careful control.

27742. I do not know who prepared this note on marketing in the memorandum which was sent us by the Provincial Government. On page 11 (page 3 above) it is stated: "The results of this inquiry (that is, the inquiry by the Indian Central Cotton Committee) have not yet been published but they indicate that a strict application of the rules to govern these markets will be necessary to prevent a good deal of the fraud at present practised on the seller". Have you any information on the point?—The inquiry was started before I went on leave and since I came back I have not seen the full account of it. I believe the full reports are still with the Cotton Committee.

27743. I understand that you yourself do not feel satisfied that the practice is quite as good as the theory? That is really the trouble.

27744. I do not know whether you would be prepared to answer questions in detail on the organisation of the Co-operative Department. Do you take a personal interest in it?—I am necessarily in touch with the Co-operative Department; but I would prefer not to go into details until you have examined the Registrar of Co-operative Societies.

27745. One or two general questions. Are you satisfied with the organisation of the Co-operative Department?—I have said in my written evidence, I think, that it requires a whole-time officer with special training.

27746. Where do you suggest that special training should be given?—I cannot suggest anywhere.

27747. You have not thought it out?—No.

27748. *Sir James MacKenna:* Have you not got a whole-time officer now?—He is the Registrar of Co-operative Societies, Director of Industries, and has two or three other functions also, such as the controlling of Boiler Inspectors and so on.

27749. *The Chairman:* Do you regard co-operative credit societies as the most helpful agent for solving the problem of rural indebtedness as it exists at present?—I think it is one of them.

27750. I understand that the experience of the Province in the matter of co-operation has not been without its disappointments?—No; there had been severe disappointments and even so it is one of the most helpful agents. I think alternative schemes might be developed that could be put in the hands of men who could make a study of the subject.

27751. In answer to our Question 23 (*a*), you are talking about the existing systems of education and you say they are not such as to induce the middle classes to return to the land. Should not the first problem be to discover an educational system which would keep the cultivating classes on the land?—You mean the present system?

27752. Are you satisfied that the present system, if it is developed, will succeed in educating the present cultivating class without inducing it to leave the land, a more important matter than that of inducing the middle classes to turn to it?—I do not see any sign that the present system will induce the people to return to the land.

27753. Do you see any signs that the existing system might disturb the cultivators and induce their educated sons to leave the land?—I think there is always the tendency for an educated man to seek employment away from the land.

27754. Have you any suggestions in the matter of general education which you have not set down in your note?—No.

27755. Would you attach great importance to an improvement in the drinking water-supply of villages?—I think there are tracts of country in the Central Provinces where the drinking water-supply needs to be carefully investigated. In fact it is so important a thing that I consider that it needs a special officer.

27756. Do you see any hope of financing the improvement of the drinking water-supply in these rural tracts which you are speaking of?—I think it is one of the items which should be financed with the general improvement of rural areas, communication of roads and so on.

27757. It is mentioned by one correspondent that a perusal of the last two or three Settlement Reports will show how much land has passed from the tenants to their malguzar as a result of the operations of debt; do you agree with that?—I do not think there is a tendency for the land to pass into the hands of the malguzar.

27758. Does that mean that the cultivating class ceases to cultivate or do they continue to cultivate on a new footing?—They cultivate on a new footing.

27759. Have you any idea of the extent to which the movement in question is going on, the alienation of the land from the cultivating classes to the malguzar?—No; but that information could be obtained from the Settlement Department.

27760. Do you happen to know whether it was ever been extracted from the Settlement Reports?—Not that I know of.

27761. Now, in attempting to solve the problem of improving the lot of the cultivator in this Province, would you rather see a concentration of means and expenditure of money on one or two specific points such as education, technique of tillage and the like, or a steady attempt made to advance all along the line?—I should like to see a concentration on education, agriculture and rural sanitation and health.

27762. Interpreting each of those headings in their widest sense, of course that is coming pretty near an approach all along the line?—Yes, it is.

27763. *The Raja of Parlakimedi:* There is a large area of paddy in this Province, is there not?—Yes.

27764 What are the popular fertilisers used by the cultivators?—One may say that no important fertilisers are used at all; cattle-dung is used where it is available, but there is not much manure used at all.

27765 Is the department doing anything in the way of teaching the ryots the use of fertilisers?—We carry out experiments on our own farm on such things as the use of *sann* hemp, bonemeal, leaves and things of that sort.

27766. Do you also arrange for the sale of green manure seeds to the ryots?—*Sann* hemp is the only green manure which we advocate, and there is already an established market for that seed. Of course, if a man wishes us to obtain seed for him, we would make every arrangement in the same way as we would obtain other seed for him.

27767. Is it becoming popular with the ryots?—I am afraid it is not developing very quickly.

27768 Do you think it would improve if there were many more demonstrators?—I think it would All items of propaganda would be more successful if we could concentrate our demonstration, our demonstrations at present are too diffuse; we have not quite enough men; a man visits a village too infrequently to make his impression felt

27769. What is the area under irrigation as compared with the area rain-fed in the whole of the paddy-growing tract?—We could obtain that information for you.

27770 Are there double cropping areas or only single cropping?—Double cropping is common but not universal, for instance, in the area round here you will see here and there fields lying in advantageous position which carry a second crop, but on the higher lying tracts there is only a single crop; the rice is not followed by any other crop.

27771. Is paddy grown as a double crop?—No, the paddy is grown as a single crop, but there are other crops in favourable positions where a double crop is grown

27772. As a catch crop?—Yes.

27773 Are any of the Coimbatore varieties of sugarcane popular in this part?—They are becoming popular

27774. What sort particularly?—210 is perhaps the most popular, 219, and we hope perhaps 237 and 242

27775. Have you any statistical information with which you could furnish us to indicate the increase in the use of the Coimbatore varieties up to the present?—We could obtain that for you; they have only recently been introduced into the Province, but we could find out the number of canes distributed.

27776. What is the state of the roads in the paddy tracts?—The main roads are quite good.

27777. Are they maintained by the District Boards?—In some cases by the District Boards and sometimes directly by the P. W. D.

27778. What is the state of the village roads?—There is not much trouble about village roads over the higher lying laterite soils; the village roads are not particularly bad.

27779. What is the nearest outside market for your Province for paddy?—Some goes to Jubbulpore, which is an inside market, and the rest goes to Calcutta, the paddy area being in the east of the Province.

27780. Is any attempt being made to introduce improvements in that area?—Yes.

27781. What are the improvements?—The chief improvement is the introduction of light iron ploughs, the Meston, the Monsoon, and so on.

27782. *Prof. Gangulee:* What is the inversion plough of which you speak?—The turn-wrest plough or the Monsoon plough, the Sabul plough; we have not any particular plough which we call the inversion plough.

27783. What particular plough have you introduced?—The plough we have introduced on the larger scale is the turn-wrest plough.

27784. *The Raja of Parlakimedi.* What facilities are provided to enable the ryots to get these ploughs?—*Taccavi* is issued very freely.

27785. Where are the depôts to which the ryot has to go?—On Government farms; there is one depôt at Raipur. All the main Government farms have a depôt.

27786. At what distances are these depôts found? Are they fairly well distributed in the paddy area?—Yes, and there are some sub-depôts too.

27787. May I know the number?—I could supply you with the actual number of depôts, but as a general rule one might say that the depôts are within easy reach; any cultivator can fairly easily get a plough; we try to make the depôts as widely distributed as possible, and we encourage Agricultural Associations to keep depôts for ploughs so as to get them out as far as possible to all the villages.

27788. Do the cultivators experience any difficulty at all in securing parts of the implements?—Not of the common implements; these depôts where the ploughs are sold also keep spare parts.

27789. Can the ryot get the parts of wood that are necessary?—He can get those from the local jungle.

27790 Is there any restriction enforced upon the ryot as to getting a supply of timber?—No, not of any importance; he can get the timber all right; there is no trouble about the timber.

27791 Is it by application, or what is the procedure he has to adopt?—He can get timber, it is available quite easily everywhere; he could get it from the malguzari area. The amount of timber he wants is so slight that there would be no difficulty in his getting it. You are referring now, of course, to green timber, not dry.

27792 Fairly seasoned timber?—Yes, seasoned timber for implement making; there is no trouble about that.

27793. Of course, that means he has to get some superior varieties?—Yes, one of the timbers suitable.

27794. What steps are being taken by the department to improve the cattle?—In the Chhattisgarh area that was dealt with in detail in this scheme under the heading, Eastern Circle, you will see that it is proposed to convert the small cattle farms into stock depôts, thus adding to the size and productive ability of the farms; and in addition we propose to open a cattle-breeding farm for the tract on a big scale at Pendra. That is referred to in the statement at the end; that is the cattle-breeding scheme, the amalgamation of the three existing herds into one big herd and the development of the present depôts.

27795. Do you think it will be sufficient for the area?—I do not, but it is a good deal better than anything we have at present.

27796. Do you intend to cross-breed or go by selection?—A combination of the two, cross-breeding and selection.

27797. Is it for dual purpose?—Largely.

27798. Are there any recognised cattle-breeders in this Province?—Yes, regular professional cattle-breeders.

27799. Are there any strains notable for milk?—No, not in this Province.

27800. Is it mainly for draught purposes then?—Yes, mainly; and then, of course, there are a good many buffaloes also brought into the Province from outside.

27801. Are there large orchards in this Province?—No, the orange is the only important fruit industry; the mango is to a certain extent important, and the guava in places; those are the three local fruits of any importance.

27802. Do not mangoes do well in this soil?—Fairly well, yes; the orange, the mango and the guava are our three main fruits.

27803. Is the department taking any interest in the protection of mango crops, that is to say, to combat the mango blight and that sort of disease?—We are not troubled to any great extent with that disease.

27804. In certain areas the whole crop fails if they have such an attack?—Frequently the crop fails to set fruit owing to unfavourable conditions at the time of the flowering of the tree; that is the greatest trouble, and the loss due to storms when the fruit is on the tree; both those things are uncontrollable.

27805. You are not troubled by this disease?—No, not to any great extent.

27806. There are large tracts of uncultivated land in this Province, are there not?—There are large tracts under jungle of sorts, some of which is cultivable and some of which is uncultivable.

27807. Would not it pay to offer those lands for agriculturally qualified men to settle?—I think if there were any demand from agriculturally qualified men that land might be given out to them on ryotwari tenure.

27808. The Province is rather thinly populated?—Yes.

27809. And can take in outside population, can it not?—It could. I would rather see the present areas better cultivated than extend cultivation at a lov standard over wider areas.

27810. What are the oil-seeds grown in this Province?—Linseed, sesamum and ground-nut are the three chief ones.

27811. Approximately what area do they comprise?—They are not by any means the major crops, although they are fairly important; linseed is an important crop.

27812. Are you not for increasing the growth of oil-seeds on dry lands?—Linseed is grown to a very large extent on dry land already and so is *til* (sesamum).

27813. Ground-nut?—We are hoping to develop that as an alternative crop to cotton in the cotton areas and also as a crop in areas of lighter soils.

27814. *Sir Ganga Ram:* You do not grow much rapeseed?—No; but mustard is a fairly important seed in this Province.

27815. *Sir Henry Lawrence:* What is the area under cultivation?—I could not give you the figures, but I should say it is increasing rapidly. It is not a crop at present which comes under the statistics, I could only give you our distribution of ground-nut seed.

27816. *The Raja of Parlakimedi:* As regards the export of oil-seeds, would you like to see the export of oil-seed done in the shape of oil rather than of the seed itself?—Yes, as I mentioned before I should like to see the oil-cakes retained in this Province.

27817. What are the cakes which are popular as cattle food here?—One cannot say that any particular cake is popular. We have had some difficulty to induce people to use cotton cake instead of cotton seed; and as for the other cakes, of course cakes like *til* and linseed in particular are quite popular for cattle feeding; we are popularising the use of cakes like *karanja*.

27818. *Dr. Hyder:* What is *karanja*?—It is an ever-green tree which grows in the jungle.

27819. *The Raja of Parlakimedi:* Is *karanja* seed used as cattle food?—No, more as a manure.

27820. It is a bitter seed, is it not?—Yes, but it is a very valuable manure. Castor cake of course is another one but that also is entirely a manure cake.

27821. *Sir Henry Lawrence:* Is *karanja* fairly common all over the Province?—Yes. It is a very good roadside or shade tree on soils that suit it.

27822. *The Raja of Parlakimedi:* You have a fair amount of sugarcane?—Not a great deal, as we used to have. The area under sugarcane has gone down in recent years.

27823. What was the reason for that?—Importation from other countries to a large extent. That was gone into by the Sugarcane Committee. It was largely due to imported sugar replacing the local product. We still have a big

demand for *gur* and although it is not one of our major crops we do devote a good deal of attention to sugarcane.

27824. What are the main irrigational sources of the Province?—Tanks, and schemes like the Mahanadi Tank and River Scheme.

27825. *Sir Ganga Ram:* Tanks above the ground or tanks dug?—Generally an embankment retaining water on an elevated area.

27826. *The Raja of Parlakimedi:* In the rural areas, have you had any complaints from the ryots as regards irrigational facilities from the sources?—There are frequent complaints arising from the agricultural officers with regard to the supply of water and so on. We look into these things and try to set them right as far as possible.

27827. Do you frequently have opportunities of meeting the irrigational officers and discussing matter with them?—I meet the Chief Engineer, Irrigation, very frequently.

27828. How does he take your advice in such matters?—We discuss a lot of problems quite informally. If he wants anything done in the department he asks if I can do it and we manage it all right. Only two or three days ago, he was confronted with a problem with regard to a tank in the north of the Province. We discussed that and I took action to get the Deputy Director of Agriculture to follow a certain line which he (the Chief Engineer) wanted laid down. Then again the Chief Engineer sends me on papers from his office to see, and writes for information when necessary.

27829. You do not disagree upon many points?—Not often. I mean there is non-opposition between the two departments. Perhaps you might ask Colonel Pollard-Lowsley for his views on the subject?

The Chairman: We will.

27830. *The Raja of Parlakimedi.* As regards the levy of a cess upon exports, would you not like to see that some portion of it went to the cultivator also as an encouragement for further growing?—As a bounty on acreage, do you mean?

27831. On the quality of the stuff turned out?—He will get his bounty on the outturn if he grows good quality stuff.

27832. You are going to levy a special cess for research work and so on. If a man has followed your methods of cultivation and also conducts intensive cultivation, do you not think some sort of recognition of that as a monetary present would encourage them further?—We hope the diffusion of such advice would lead to monetary advantage.

27833. Would you leave it at that?—Yes, I should leave it at that.

27834. *Sir James MacKenna:* In answer to the Chairman you hazarded the opinion that if the development of the provincial departments had been contemplated, Pusa probably would not have come into the scheme of agricutural development proposed by Lord Curzon in 1903 or 1904. Are you aware that in that Despatch the scheme of provincial expansion which has actually taken place was envisaged and suggested, and that even then Pusa was included in the scheme?—I was not aware of that.

27835. Would you have disagreed with Lord Curzon's Government if you had been a member of it with regard to this scheme?—No, because I have already pointed out that there is a need for some central organisation.

27836. The impression I got from your answer to the Chairman was that so far as the Provinces were concerned you had very few relations with Pusa and that you were not at all satisfied with the training given there?—I did not say I was not satisfied with it. I think in my own mind that probably an alternative system of training would lead to greater efficiency.

27837. Then what is the net substance of your remarks as relating to Pusa? Do you consider it unnecessary and that it should be closed?—No, I would not say that by any means, because I think there are also a good many men who need training in the Agricultural Departments who would be benefited by a training at Pusa, but I am not sure that Pusa could give at present the highest possible training which is necessary for some appointments. I think some men require rather a wider outlook than Pusa perhaps can give.

27838. I will take up that question later. Now with reference to detail. What kinds of wheat do you think have given the best yield in this Division?—In the Chhattisgarh Division some of the Pusa wheats have done quite well: but in the north of the Province they prefer their own locally produced wheats.

27839. Have many of the Assistants in your department been trained at Pusa?—At present we have three or four.

27840. In the past?—We had one man also trained but he left us. He will be giving evidence a little later on; he is now doing agriculture on his own.

27849. Where was your present Mycologist trained?—He was on the staff at Pusa.

27842. Have you got any assistance from Pusa in the matter of cattle-breeding?—From Pusa, including Bangalore?

27843. I do not mind, including the two?—We have had advice from them. But the present system of cattle-breeding as drawn up in this note has been so drawn without any reference to Pusa.

27844. Have you purchased any cattle from Pusa?—Yes, a certain number have been got from there and also from other parts of Northern India.

27845. What are your views on the training of Indians for the superior grades of the service now that the department is being Indianised? What do you think is the ideal for a man of the Superior Service?—I suppose the bulk of them must be trained in India and exceptional men, I think, should be sent for a wider training. There are already available in India quite a number of men who have been trained, some in India and some abroad, who are still looking for posts. But, as I say, the bulk of them will be trained in India and one wants to give them as wide a training as possible. Therefore I am not in favour of training a man entirely in a Province, because there again he only comes up against one person who is acquainted with his subject and that I think is one of the advantages of sending a man to Pusa. But, even there, if he is trained entirely in India, he only comes up against one or two men. That of course will be put right as time goes on. I think however that the bulk of the men for all the Agricultural Departments will have to be trained in India. Provincial training I must say is of the very greatest importance because the man has got to apply his knowledge in a certain Province. Pusa can only give him a wider outlook.

27846 What are your views on sending Indian students to Europe?—I should ordinarily send only exceptional cases, and for particular purposes. But I think you have at the present moment in India a considerable number of men who have undergone foreign training. I have had three such men.

27847. Coming to your memorandum, for the financing of the central agency you suggest a cess on exports. Have you considered the incidence of this assessment? How would it affect particular Provinces?—As between an export duty and an acreage cess, I have come to the conclusion that the tonnage incidence is preferable.

27848. But do you not think that would fall very inequitably. For instance, the cess rate on rice runs to 11 lakhs of rupees the bulk of which would be provided by one Province? Half the total collection would be provided by one Province. In the circumstances, do you not think that the acreage rate would be more equitable?—The acreage rate would fall heavily on Provinces where the acreage outturn was low.

27849. You need not assess it on revenue below a particular scale?—In any scheme for levying a cess, I see difficulty. On the acreage basis, unless you have a fluctuating rate, the man who grows only 600 lbs. an acre will pay the same amount as a man who grows 1,200 lbs. On the other hand, with an export duty a Province like Burma which is exporting the bulk of the rice would naturally hope to get from the funds available a large part of that money for research work on rice because it is one of its major problems.

27850. Does Burma rice come here a great deal?—Not a great deal because it is not the type of rice that people in this part of the country like.

27851. Would you recommend a larger proportion of this cess being earmarked for provincial work and a contribution of, say, 10 per cent being given to the Central Government?—I think the fact that a crop was an important one in a Province would make it necessary to give back to that Province a good deal of money for work on that crop. If the money could go back to the Province which raises the crop, it would be a better crop and schemes would be put up for work on that crop.

27852. I take it that you would not include cotton in your scheme?—Cotton is already provided for for the time being.

27853. With regard to veterinary research, I see you have some objections. You say that there is cramped accommodation owing to the fact that veterinary research is at present carried on under the same roof as agricultural research. Apart from that, have you any objection to the veterinary and agricultural laboratories working side by side?—It sometimes makes for economy. We house them together only when the Veterinary and the Agricultural Departments have been combined and have not been able to find an institution for themselves separately. It is a very important department and should have a properly organised institution.

27854. In reply to Question 2 (v) you say that "the affiliation of the Nagpur College to the University has been an accelerating factor in this direction". Do I interpret you aright when I say that there are no posts in any other branches of Government service open to agricultural graduates except in the Agricultural Department? That is to say, there are no posts earmarked for them?—There are no posts earmarked for the agricultural graduate but he can get into the revenue line.

27855. How do they appoint to that service? Is it by competitive examination?—No, by selection.

27856 So that the agricultural graduate's chance is probably not very good?—I do not think he has a good chance because he has been trained in a highly technical line and is not trained so much in general culture.

27857. *Prof. Gangulee:* Would you like to see certain posts reserved for them in the Revenue Department?—I should not press for that. I should, however, like to see agricultural graduates being given a trial for these posts and if they prove suitable, they should be given a further field.

27858. *Sir James MacKenna:* Do you think the Reforms have affected the agricultural interests of the Province? Is any interest taken in agricultural matters in the Council?—I think a very considerable interest is taken in the Council in agricultural matters and I think the Advisory Board on Agriculture is becoming more and more valuable.

27859. *The Chairman:* Do you associate that increase in interest to the coming into effect of the Reforms?—To a certain extent I do. I think the mere fact that agriculture is a Transferred subject has aroused a little more interest.

27860. *Sir James MacKenna:* You have not been adversely affected financially?—Our budget has been increasing. We do not get everything that we ask for but I cannot say that our budget has been badly cut down. In fact, year by year the budget has been increasing.

27861. *Prof. Gangulee:* Of the four tracts that you have in this Province, to which tract does your department devote most attention?—I should say probably the cotton tract. I say that because at the present time we have a Botanist who is working on cotton alone. That is the only crop that has a whole-time officer.

27862. You have devoted most attention to the cotton tract. Which is the principal crop of the Province?—Cotton is the most important crop from the point of view of acreage.

27863. What is the total area under rice?—It is about the same as cotton. These are the two big crops, but more attention has been devoted to cotton

27864. In the Central Provinces, I find that 76.4 per cent of the total crop area is given over to rice, so your department has not paid adequate attention to rice?—We have never had more than one Deputy Director of Agriculture who was largely concerned with rice.

27865. Agricultural progress varies, of course, from tract to tract. Where do you find progress most developed and clearly defined?—First of all, in the cotton tract, then in the wheat tract and then in the rice tract. That is the order.

27866. I ask you a general question. If you were asked to name one of the many institutions that your department has made to the agriculture of

the Province, what would be your reply?—The introduction of improved seed of rice, cotton and wheat.

27867. These are the results of your local selection work?—Yes; to a certain extent we have had some of the Pusa wheats also.

27868 What about rice?—It is entirely local rice.

27869. Is it all local selection work, or have you had any hybridisation work also here?—We had to a certain extent hybridisation on cotton and wheat.

27870. What sort of assistance is the cultivator beginning to seek? You said just now in answer to a question from the Chairman that they were beginning to seek assistance?—They want assistance in the selection of implements in the sort of seed that would be useful to them, how to crop their land or advice on the subject of manuring.

27871. Is it widely known among the cultivators of the Province that the Agricultural Department gives them very good seed?—The reputation of the seed of the Agricultural Department is, I believe, high.

27872. What are the agencies through which you distribute this seed?—We distribute seed through the Seed Unions, seed farmers and bodies of that type.

27873. On page 7, of your memorandum you say that the "grain for seed is nearly all advanced by either the malguzar or the *sowcar*". Do I then understand that these malguzars and *sowcars* have access to your seed?—That has nothing to do with the departmental seed; it is concerned with private seed.

27874. The majority of cultivators obtain their seed from the malguzars and the *sowcars* is that a fact?—They make their own arrangements for the seed; it has nothing to do with the departmental arrangements.

27875 So the grain for seed is nearly all advanced either by the malguzar or the *sowcar*?—Yes. That is their seed grain business.

27876. The cultivator looks to the malguzar or *sowcar* for the supply of seed?—Yes.

27877. I want to ask you whether these malguzars and *sowcars* have access to the departmental seeds?—They have no access to the departmental seeds, but there is no reason why a malguzar should not be a seed farmer and should be able to produce departmental seed.

27878. But is that the case?—He can do it; there is no reason why he should not. In fact, we do all that we can to enable the malguzar to grow our seeds.

27879. How do you control these seed farms?—They are directly under the control and advice of the district agricultural officers.

27880. Do you have any arrangement for testing the purity of the seed?—The seed farms are inspected during the growing season.

27881. Are they inspected by the Botanist?—Not by the Botanist because they are too many for him to go over. They are inspected by the trained Agricultural Assistant.

27882. Let us take the difference in yield between your seed and the seed grown by the ordinary cultivator?—In the case of which crop?

27883. Say, in the case of rice?—When you go to the Labandih farm you will find there a statement showing all this clearly. It depends on whether it is early rice or a medium rice.

27884. Is the difference sufficiently attractive?—There is a substantial difference.

27885. The difference is so much that it appeals to the cultivators?—Distinctly.

27886. Is the difference with regard to the quality?—Yes, and the superior quality is largely due to the fact that seed is pure seed.

27887. That quality is recognised in the market?—Yes.

27888. Does it get a better price?—Generally it does.

27889. Now, about your demonstration work. I think you have explained that the qualification of your demonstrators is that they have been trained by you in the Nagpur College. Am I right?—Yes, mostly they are trained there.

27890. What is the method you actually follow in your demonstration work?—The Agricultural Assistant tours for a considerable number of days every month and visits all leading agriculturists. He goes from village to village and advises them to take up certain improvements, deposits certain seeds and generally takes implements with him in a cart. The implements are worked and demonstrated on the man's land. If he is willing to take an implement, then arrangements are made for the advance of *taccavi* grant.

27891. You do not grow any crop on the cultivator's land?—We do not make the cultivator's land the demonstration plot: we have our own demonstration plots.

27892. You have got your demonstration plots, your experimental plots and you have your demonstration farms. What is the difference between a demonstration plot and a demonstration farm?—The demonstration plot is a temporary plot which is, as far as possible, about the size which the cultivator in that area would normally cultivate; it it farmed purely as a business proposition; there are no permanent buildings on it, and it is farmed as we recommend a man to farm in that particular area; it is carried on for 5 years, and then is closed.

27893. You keep a record of the cost of cultivation?—The cost of working that farm year by year is carefully kept and analysed.

27894. What is your demonstration farm?—It is a permanent farm; it is a seed farm really for the growing of big areas of improved seeds.

27895. It is entirely under the control of your department?—Yes, it has permanent buildings and it is a permanent place.

27896. In your experimental plots there is no demonstration?—In our experimental plots, we do grow of course the ordinary recommended varieties, the experimental farms do produce seed and do act as demonstration centres. In our demonstration farms, nominally there is no experimental work, but the varieties are tested side by side; they have a certain amount of experimental work also.

27897. You have provided us with a chart showing the nature of your organisation and I am afraid I have not been able to follow the chart quite clearly. I should like to ask you who is the connecting link between the *kamdar* and the higher authorities?—The Agricultural Assistant on demonstration duty. The latter is under the Extra-Assistant Director of Agriculture who is again under the Deputy Director of Agriculture.

27898. You have no occasion to supervise the work of the *kamdar*?—Not directly, but I see the *kamdars'* work.

27899. These demonstration areas are permanent?—The demonstration plots as a rule are for five years only. The demonstration farms are permanent with permanent buildings. Only the demonstration plots are temporary.

27900. What is the nature of the demonstrations you have been holding during the last few years?—The demonstration of implements, the demonstration of seed growing side by side with local seed and things of that kind.

27901. Also manure?—Not much of it. We have not got anything to distribute on an economic basis.

27902. So you have two things to recommend, the purity of the seed and secondly the implements?—And sometimes methods of cultivation, for instance, the sowing in lines instead of broadcasting in certain parts of the Province.

27903. Could you tell us the quantity of seed you produce in your seed farms?—I think it has been given in one of the statements provided.

27904. In your demonstration work, do you receive much assistance from the Revenue Inspectors or Tahsildars?—We go even further than that; we receive considerable assistance from the revenue officers. We have an Agricultural Assistant attached to the camp of either the Deputy Commissioner or the Assistant Commissioner or a revenue officer of that standard, and he goes round on tour with that revenue officer and takes advantage of the opportunity afforded by the gathering of people to attend the camp to carry on agricultural propaganda.

27905. I come now to the statement of the distribution of seed. The total quantity of seed distributed is 183 thousand maunds and the area sown with

improved seeds is something like 844 thousand acres. What percentage of the total seed requirements is supplied by your farms?—A very small proportion when one realises that there are 5 million acres of land under wheat and the same area under rice and 2 or 3 millions under other crops.

27906. With regard to such improvements as the practice of transplanting of rice which is distinctly an improved method, what do you find to be the chief obstacle to the introduction of that kind of practice?—For that particular practice the obstacle is simply the local economic conditions that prevail owing to the scarcity of labour and so on.

27907. So is it your view then that these fundamentally uneconomic conditions prevailing in certain parts must be improved before agricultural improvements can make any headway?—I am afraid it is rather arguing in a circle. I do not know how we could break the circle. Improvement in economic conditions would enable us to demonstrate agricultural improvements more easily; on the other hand improved agricultural implements would raise the economic life of the people.

27908 The point is, how to begin and where to begin?—Yes.

27909. Do you find illiteracy a serious handicap?—Yes, very serious.

27910. In which tracts do you find demonstration comparatively easy?—I think demonstration work is easier in the cotton tracts and as a result of that I may say that it is unnecessary for us to open Government demonstration plots in those tracts. I may also mention that in the rice tracts we get plots from people who are anxious to open demonstration farms of their own.

27911. With regard to the assistance that you receive in your demonstration work you have told us that there are District Associations, Taluk Associations and Circle Associations. Do these associations take enough initiative in the matter of agricultural improvement?—As a rule the smaller the association is and the closer it is in actual touch with the village, the more active it is. Of all the associations, the District Association is the least effective.

27912. Because it is much larger?—Because it is an association of people coming from a wider area.

27913. These are purely non-official agencies?—They are non-official in membership. But generally an official takes the place of the President. For instance, a revenue officer, say the Tahsildar, attends the Taluk Association as an *ex-officio* Chairman.

27914. These are of great assistance to you in your demonstration work?—Yes, particularly the small associations.

27915. You have got a Provincial Board of Agriculture, have you not?—Yes.

27916. What are the functions of that Board?—It is an Advisory Board to the Local Government, but it goes a little further than that because it has the power of criticising schemes placed before it.

27917. I want to ask you one or two questions with regard to your research if I may. Have you visited Pusa?—Yes.

27918 In what connection?—As a member of the Board of Agriculture. I have also attended the Sectional Conferences there.

27919. As a Director of the Agricultural Department here, have you been able to carry on any experiment yourself?—No.

27920. You are mostly engrossed in your administration work?—Quite so; I have no area directly under my own charge.

27921. You talk about the inadequacy of funds. What fundamental research work are you unable to undertake now owing to lack of funds?—We might take up botanical work. We find it necessary to have a whole-time Botanist for cotton; surely it is necessary to have a whole-time Botanist for rice.

27922. You have got two Economic Botanists already?—Yes; but the second one takes all crops except cotton and crops grown in rotation with cotton, he is also in charge of the teaching work of the Agricultural College and is also in charge of horticultural work; that is, he has to supervise 3 or 4 big public gardens in Nagpur. Now, on the analogy of the Education Department, a teaching post in an agricultural college is a whole-time post in itself. It is hard to

expect a man who is teaching in an agricultural college affiliated to the University standard to do the teaching work and at the same time to be an Economic Botanist for many of the most important crops of the Province.

27923. You get a certain amount of help from the Indian Central Cotton Committee; do you not?—Yes; we get a certain amount of money from them.

27924. The First Botanist is engaged in cotton work?—Yes.

27925. And the Second Botanist?—In general work; and it is peculiar that in this Province the Central Cotton Committee pays the cheaper man and employs the services of the expensive man. That is, they pay for the Second Botanist who has taken over some of the botanical work, while the First Botanist, who is the senior man, is entirely engaged on their work.

27926. What is the work of the Agricultural Chemist?—He supervises both the chemical work and the bacteriological work. He has also teaching work and experimental work which is largely in connection with soils. You will have an opportunity of inspecting that work at Nagpur.

27927 You think at the present time you have sufficient staff and laboratory equipment to carry on fundamental researches on soil and on plants?—I should like to see the scientific staff, such as the botanical staff and the chemical staff, increased so that there should be one man entirely for teaching work and one man for research work. I would not prevent the teaching man from doing research work because he would probably be interested in it. But I think this dual function occupies too much of the time of the scientific officers.

27928. When I talk about fundamental research what I mean is this. You have in agricultural research two distinct aspects, one dealing with fundamental problems and another dealing with minor questions arising from them. The point I should like to get from you is whether you think your staff and your equipment generally are adequate to carry on fundamental as well as minor research investigations?—At present I should say they are and if we continue to recruit men of the same standard as we have at present, I consider they are quite enough to carry on fundamental work.

27929. You would not like to see a central institute like that at Pusa to carry on the fundamental work?—I cannot quite see how a central institution at Pusa could carry on fundamental work in a Province.

27930. May I explain? Suppose you take the black cotton soil. As you know the whole of the black cotton, or the greater part of it, is deficient in nitrogen. Now that problem is not merely limited to a particular Province. Bombay is interested as much as you are interested so that that particular problem, the problem of nitrogen in black cotton soil, could be taken in hand by a central organisation?—But on the other hand the soils in the Raipur district here are equally deficient in nitrogen.

27931. That might be a provincial problem?—I see no reason for making the black cotton soil an Imeprial problem and the other a Provincial problem.

27932. The nature of the problem is such that it arises in more than one Province?—But the deficiency of nitrogen exists in all Provinces.

Therefore it is a fundamental question and ought to be tackled by the central organisation.

27933. In your own research work, did you come across a single problem, any specific research problem, which you would like to see tackled by an Imperial Institute such as the one at Pusa?—I cannot say that I did.

27934. We are often told there is a surplus cattle population in some of the Provinces; is that the case in this Province?—There are too many cattle of a type; there are too many inferior cattle and not enough good cattle.

27935. Are you trying to introduce some new varieties of fodder crops in this Province?—We have tried a good many varieties of crops, only some of which seem to be economical so far.

27936. Cassava?—We have grown cassava but it is not a crop which is very useful to this Province.

27937. The improvement of a crop, as you know, involves a number of factors; when you conduct your research, either in the laboratory or in your

experimental farms, do you attempt to bring into focus various factors?—Yes, we like to look at the problem from the point of view of all factors, whether it is mycological, bacteriological, chemical, botanical, and so on.

27938. You try to get sufficient data in order to understand the problem from all its aspects?—Yes; in fact I have a scheme now in view for subjecting all experimental work to an experimental board in the Province composed of officers of all sections.

27939. In Nagpur College you have a four-year course?—A four-year course and a two-year course.

27940. These advanced students are quite familiar with the nature of the work you are doing?—Yes, quite.

27941. I mean the fourth year students?—Yes, they should be; I have not done any active teaching lately, but when I was doing active teaching I took care to discuss things going on in the Province, and I believe students are now given an insight into what is going on in the Province.

27942. Is it not your practice to take your fourth year students to visit such stations as the Coimbatore sugarcane station?—No, but it is our practice to take them to visit the stations in the Province.

27943. Not the Imperial stations?—No, not on such long journeys as that.

27944. *Sir Ganga Ram:* You said that the Agricultural Engineer had resigned; do you propose to fill the vacancy or is it abolished?—No, it is not abolished, but we are now rather in a transition stage; the Imperial Agricultural Service is now abolished and we cannot fill posts of that type, so that the whole position with regard to posts which were formerly posts in the Imperial Agricultural Service has to be looked into.

27945. Now you will have to engage a man on Provincial Service?—On new terms.

27946. On Provincial Service?—Something of that kind, a special post.

27947. What salary does it carry?—We have not had any orders on that subject yet.

27948. What are the functions of the Agricultural Engineer?—He advises on plant, attends to repair, keeps an organisation for the erection of small power plant.

27949. At the Agricultural College?—He is in Nagpur, he has nothing to do with the Agricultural College.

27950. Does not he teach mechanics?—No, he does no teaching.

27951. Is not Agricultural Engineering taught as a subject in the college?—They have their own lecturer in Engineering.

27952 The man who lectures there is not an engineer?—He is an Engineer but not the Agricultural Engineer, in the same way that the Deputy Director in charge Animal Husbandry has no duty of lecturing on Animal Husbandry in the Agricultural College.

27953. Is this agricultural engineering under you?—Yes.

27954. Forgive me for asking, but have you any training in engineering?—Yes, I was under Professor Cawthorne-Unwin at one time.

27955. Who deals with well-boring?—At one time that was under the Agricultural Engineer, but the work is scarcely work that can be put upon an officer of that type without taking up far too much of his time; it has now been transferred to the Public Works Department.

27956. Has no boring been done?—A certain amount of boring was done in trap rock. It was such a difficult problem, that it took far too much of the Agricultural Engineer's time. It was too important a problem to make part-time work for an officer occupying the post of Agricultural Engineer. It is whole-time work, not part-time work.

27957. It is the proper function of the Agricultural Engineer, is it not?—I do not consider the supply of water for household purposes for villagers is his proper function.

27958. I am talking about water for agriculture?—That is another thing, but not boring for well water for household purposes.

27959. No, I am not referring to that. The reason why I ask you this question particularly is that I was told that in many cases the crops failed only for want of one watering. Is that so?—That is frequently the case; I do not say one watering would save the crop, but it would improve many crops at a critical time.

27960. Where is that one watering to come from except from the subsoil?—Or from tanks.

27961. I am coming to tanks very shortly. Anyhow, it comes from lifting water from tanks or wells, does not it?—Yes.

27962. Then lift irrigation comes in?—Lift irrigation is certainly a function of the Agricultural Engineer, and the deepening of wells, but it is scarcely necessary for him to undertake the deepening of wells, because that is a work well known to people in the Province.

27963. Do you go in for tube wells?—We have never done anything with tube wells; our geological conditions are not such that tube wells could be introduced.

27964 How do you know that? Has there been any investigation in that respect?—There is the Geological Survey, they surveyed a great deal of the Province.

27965. Part of this enormous quantity of rainfall that you get is used in irrigation; where does the rest go to?—Into the rivers.

27966. Floods?—Yes.

27967. Is there no kind of soil here which will take that water?—There are very few areas of deep alluvial soil here at all. The big problem is that where the rainfall is short, where we have a rainfall of say 20 to 30 inches, in those areas the underlying rock is very nearly all trap.

27968. What is it?—Basalt trap.

27969 Is it in strata?—Yes, with fissures, layers of trap rock of different ages overlying the water-bearing strata.

27970. And you cannot make wells in that?—You can make wells, but it is an extremely difficult and expensive matter, because to find the water in trap rock is a very uncertain thing.

27971 But do you not think it is better to give the people one watering from wells to save them from famine?—Yes, I agree, if you can get the wells it is a good thing.

27972. Do you not encourage the sinking of wells?—It is encouraged.

27973. What is the depth of the water from the surface of the ground?—It may be 70 feet, 50 feet, or it may be 100 feet. The depth to which you can sink a well in trap rock is an absolutely uncertain thing; you may sink a well in trap rock and get a small supply of water; with a view to improve it, you may sink deeper but all the water slips away through a fissure.

27974. Have you ever investigated to see whether the supply of water from a well can be augmented by the dynamite process?—By putting channels; that is sometimes done.

27975. Is it done here in this Province?—I believe so.

27976. But also sinking dynamite shafts and blowing them up?—Yes, that has been done too.

27977. Have you any report on that subject?—No, I do not think we have; our department has only just touched on well-boring for a short time; we had one or two well-boring plants, but it was only a part-time work for an officer who had a lot of other things to do, and it was handed over to the Public Works Department.

27978. When did you have a famine last? I know in 1899 there was a severe famine?—I have been out nearly 21 years and I do not remember a famine. We have had scarcity but I have never encountered a famine in the Central Provinces.

27979. To what do you attribute the fact that there are no famines now, whereas in the latter part of the nineteenth century they were very frequent?—

I think it is due to the fact that stores of food-grain outside the Province are now easily moved about inside the Province.

27980. Not that production has increased?—No, I should not say that; I think it is the improvement of communications, railways and roads.

27981. Have you not opened relief works since 1900?—A certain number of relief works have been opened at odd times of scarcity, but there has never been a famine such as there was in 1899. In 1907 there was scarcity in some parts of Berar.

27982. Did people come to the relief works?—Yes, I believe so.

27983. Relief works were opened, were they not?—I have seen famine relief works about, but I could not tell you off-hand to what extent they were utilised.

27984. You always aim at making tanks. Are these tanks fed by seepage of drainage water?—They are drainage tanks.

27985. Or are you only relying on the rain water?—The run-off from the catchment area.

27986. From higher areas?—Yes.

27987. What is the size of the biggest tank you have here?—The biggest tank I have personally seen is the Nawagaonbund which I believe is between 16 and 17 square miles.

27988. Is that artificial?—Yes.

27989. Have you got big retaining walls round it?—One very small *bund* about a quarter of a mile long.

27990. Then you have put it in the valley?—Yes, with hills around.

27991. You have introduced big tanks with big walls?—Yes, but those are built by the Irrigation Department; this is a tank which has been built by cultivators.

27992. In designing these tanks your aim always is to have them at such a height that you can take the water by flow; is not that so?—I am afraid that is the function of the Irrigation Department, not of the Director of Agriculture.

27993. You said something about Pusa. You have visited Pusa, have you not?—Frequently.

27994. Have you ever thought of some method of fixation of nitrogen from the air?—I have studied the various methods, yes; I have read a good deal about them.

27995. About nitrifying bacteria?—Yes.

27996. In Pusa did you see the laboratory where they have made that experiment?—I have not been to Pusa for two or three years, but I always go round the laboratory work when I go there.

27997. They have a very important method which is not only for provincial use but is for universal use; I was very much interested to see that; they show how nitrifying bacteria get their food from the green manure, and by constant harrowing and ploughing they breed and abstract nitrogen from the air; did you study that?—I have studied that and I have lectured on it too.

27998. Did you see the actual experiment at Pusa?—I have not been to Pusa for the last two or three years; I do not know whether that is a recent experiment.

27999. You said you preferred your own wheat to Pusa wheat; is your own wheat bearded or not?—We have various varieties, sometimes bearded and sometimes unbearded.

28000. Which do you prefer?—It is largely a question of whether birds and pigs are a nuisance; if birds are, we prefer the bearded sort.

28001. Have you seen the samples of the Punjab wheat?—We have tried the Punjab wheat.

28002. Which one?—Many varieties of Punjab wheat.

28003. Have you tried 8A?—You will be able to see that at Hoshangabad.

28004. Was it successful?—They are successful, but out of the large number

we try we endeavour to pick out the one which is most suited to our own conditions.

28005. While we are on the wheat question, I just want to ask you your opinion about one thing. You know in the London market Indian wheat is called dirty wheat; it contains 5 per cent of impurities.. Do you think the zamindars are responsible for the impurity or are the exporters responsible?—I am afraid it gets in as a result of the usual agricultural methods of threshing, winnowing, harvesting and so on.

28006. The exporters do not do it?—I do not think so. One of our very great problems in introducing threshing machinery has been to overcome the dirt which clings to the straw due to the method by which the crop is harvested, that is to say, the harvester more or less cuts or pulls it off with the roots attached.

28007. Have you ever visited the Punjab?—No.

28008. You will see pure wheat there. I have actually sold for Rs. 5-12-0 and the people sold it to the exporters for Rs. 5-8-0. Where did their profit come from?—I can only imagine!

28009. You have no sugar mills here?—We have no central factories.

28010. They all make *gur*?—Yes; or sell the cane for chewing.

28011. Do they plant sugarcane after sugarcane?—Not as a rule; they take a rotation.

28012. What is the rotation?—Sometimes rice, sometimes garden crops; it is all in small areas. The biggest sugarcane growing district would not contain more than about 2,000 acres of sugarcane. It is a crop which is encouraged to bring money to the cultivator.

28013. What grows best after sugarcane?—Cotton grows best in the stubble of sugarcane. But some of our sugarcane-growing areas are not quite suited to cotton growing.

28014. Could you give me say three years' rotation of crops on particular areas?—That depends on the soil and rainfall. Here we can grow rice after sugarcane, or cotton or ground-nut.

28015. But what do you advise?—It depends, as I said, entirely on the locality.

28016 Supposing you had, say, 100 acres of land; I want to know the scientific rotation?—On light *sihar* (sandy soil) commanded by irrigation we might grow sugarcane, followed by cotton, followed by ground-nut.

28017. They do not make here anything between *gur* and sugar? Have you any indigenous method of making refined sugar?—No, nothing but *gur*.

28018. Have you made any research as to what delta of water you require to mature each crop irrespective of rainfall?—A number of experiments have been done both by the Irrigation Department and by the Agricultural Department in conjunction and we have arrived at a general idea of the quantities of water.

28019 Can you tell me what quantity of water is required for sugarcane?—That would depend upon whether it is black soil or light soil, but generally we give something in the nature of 20 irrigations.

28020. What delta depth?—It would amount to about an inch in depth per irrigation.

28021. That means 30 inches?—Yes; then it would depend upon whether the soil was a heavy soil or not. I can give you a statement for each of the different soils.

28022. Have you made any analysis of the soil to show what crop takes away what kind of chemical—I mean nitrogen and phosphates?—That was done a long time ago. There are some standard reports on that. They date from the time of Professor Church.

28023. Can you give me a copy of that report?—Do you want it to apply to the Central Provinces entirely?

28024. Well, we will draw our own conclusions here?—What I mean is this, whether you wish an analysis made of the ash of Central Provinces rice? The

Central Provinces soil is not homogeneous; it is hard soil as well as alluvial soil; it is a very interesting experiment. For instance, wheat takes away about 180 lbs. of nitrogen out of the crop.

The Chairman: That is per acre.

28025. *Sir Ganga Ram:* We have worked out all that. We worked out the loss of nitrogen. Could you kindly give me some data about that?—Yes.

28026. Cannot you make some use of this *kans* grass?—Not that I know of.

28027. Supposing you put it in the silos, would that not soften it enough to serve as fodder in times of famine?—It would not pay for the collection. We want to do away with *kans* grass altogether and introduce a better fodder.

28028. But in times of scarcity or famine anything would be useful. Have you made any research as to whether you can make it soft enough for the cattle to eat?—I am afraid the only experiments we have tried on *kans* grass are experiments to eliminate it altogether.

28029. But you have not succeeded there?—We hope to succeed.

28030. You know that in the Calcutta market three kinds of bonemeal are exported; one is the 3/16th mesh, one 3/32nd and one the steam burnt meal. Have you any experience of that?—Not much. The application of bonemeal has not proved a very economical form of manure.

28031. Then why do such enormous quantities go to England?—Because the conditions under which they are used are rather different there. We do use bonemeal in conjunction with green manure but it is not a thing which has been taken up on a very wide scale.

28032. As regards fuel in the Punjab, in the new colonies where cotton is grown cotton stalks are used as fuel all the year round. Does that happen here?—The collection of stalks from the field is one of the *haqs* of the cotton labourer.

28033. We do not depend on cowdung now, we use nothing but cotton stalks all the year round. Would it not be advisable to introduce that here?—They do use it in areas where cotton is grown, but in an area like this rice tract there is not enough cotton grown to produce enough cotton stalk.

28034. In the Punjab the Agricultural Department supplies pure seed at a very small profit to the people. They collect the pure seeds from such zamindars who take good care not to allow anything but pure seed and they buy them and sell them at a very small profit; it does not even pay the establishment. But they do take the place of the seedsmen. Are you aware of that?—I presume every Agricultural Department is a seedsman.

28035. But they buy seeds from us and then sell it sometimes even without any profit?—We do not buy but we arrange to grow good seeds to dispose of to the cultivators.

28036. You have said in your note that the *sowcar* or malguzar sells at 25 per cent more. That takes away 25 per cent from the pocket of the cultivator and therefore they would hesitate to sow improved seed? If you sell them improved seed at the same price as bazaar seed naturally they would buy it?—We sell our improved seed at the ordinary rates.

28037. But why should they pay 25 per cent more?—That is to the *sowcar*, to the man who is financing them; not to the Government. That is where the *bania* or the *sowcar* is combining his grain growing business with banking; that is his own seed.

28038. Who buys from you?—The main buyers are the various seed farmers. We can just about supply the various seed farms. In fact we could supply far more seed if we had seed farms. We do not deal with the buying business.

28039. *Prof. Gangulee:* Do malguzars grow any pure seed?—Yes.

28040. *Sir Ganga Ram:* What do the people do with ground-nut?—They eat it to a certain extent.

28041. Do they use ground-nut oil?—Yes, but it is not a very well known oil in this part of the Province.

28042. What kind of oil do the people consume here?—Generally *til* oil.

28043. You grow no rape seed at all?—No.

28044. It is a most useful leguminous crop?—*Til* and linseed are our main crops.

28045. Do you not think that the solution of the trouble of the people here who entirely depend on uncertain rains would be to encourage them to grow more fruit? You have got beautiful fruits, mangoes, Nagpur oranges and other things. Do not you think that fruit-growing ought to be encouraged here and yet you have gone and dismissed the Horticulturist?—I should only be too glad to get him back.

28046. Whose work was that?—I cannot say.

Sir S. M. Chitnavis: It was the work of the local Retrenchment Committee.

28047. *Sir Ganga Ram*. What I only want to know is whether the encouragement of fruit-growing would not bring money to the growers?—It would, but we cannot grow oranges extensively; that would be a very expensive business and would involve extensive facilities for irrigation The irrigation is nearly always done from wells.

28048. But for mangoes, if you have a good rainfall, you do not want any irrigation?—When you start them you do require it, but as soon as the mango is well established it will look after itself.

28049. Mangoes in the United Provinces are a very profitable crop?—In the public gardens at Nagpur we have a big stock of mangoes.

28050. But I was talking of introducing fruit-growing all over the Province. Do you not encourage it?—Yes, we do. We make a special point of growing a large variety of well-used mangoes.

28051. With regard to lac cultivation, what tree have you found to carry the lac insect?—As a department we do not know much about lac cultivation. The Forest Department does that. The *palas* tree (the flame of the forest, as it is called) is a common one.

28052. Are you aware of any natural deposits which can be used as fertilisers?—No

28053. Dr. Mann said that in the Central Provinces there was a large deposit of something which could be used as natural fertilisers?—I have studied the report of the Geological Survey of India pretty carefully on that point.

28054. Do you grow crops like potatoes and onions here?—Yes, we grow them as garden crops.

28055. Do you grow sufficient for the internal consumption or do you import them?—I do not think the amount of potato grown in the Province is sufficient, but the onion crop is one that the Indian cultivator does understand how to grow.

28056. Do you grow one crop or two? In the Punjab plains it matures in April and then it is of no use after October and therefore we have to import it?—The onion is a crop that will store well.

28057. *The Chairman* Are onions very largely used?—Yes; we are also trying experiments in potato growing on the plateau area.

28058. *Sir Ganga Ram*: Have you made out any statement of imports and exports of food?—No.

28059. Are they available anywhere in your Government?—I think you would find the particulars in the general statistics of export and import trade.

28060. That has been discontinued unfortunately. I thought you might have the provincial one?—As a matter of fact, statistics of that type are dealt with by the Director of Land Records and not by the Agricultural Department.

28061. *Mr. Calvert:* Do you know whether wheat and rice are exported from this Province overseas?—I think a good deal of wheat is exported overseas and a certain amount of rice too.

28062. Regarding this question of the affiliation of the Nagpur College to the University: have you got a Faculty of Agriculture and, if so, who is the Dean of that Faculty?—The Principal of the Agricultural College is the Dean of the Faculty of Agriculture.

28063 Are you a member of it?—I am not because I am the intermediary between the College of Agriculture and the Local Government and we thought that it was as well for me to be outside.

28064. Is the Faculty so manned as to insure the proper representation of agricultural views?—We have endeavoured to secure that.

28065. On page 3* of the original memorandum there are figures given for holdings. Do these holdings refer to holdings per individual cultivator?—This particular portion was not drawn up by the Agricultural Department, if you would like to have that information we can get it from the Director of Land Records; I think that is the average holding per cultivator.

28066. On page 7* you give certain reasons for the diminution in the area under wheat, one of which is the opening up in recent years of the great wheat fields of the Punjab. What is the argument there?—I presume the argument is that the Punjab could put wheat in the market at a cheaper rate The Punjab outturn is better; our outturn is only 800 lbs. per acre.

28067. Is the idea that the production of wheat in the Punjab has lowered the prices internally?—Yes, that is the idea

28068. Actually, we know that the price has been steadily increasing?—I was not responsible for this statement, and I am not quite sure what was at the back of the mind of the man who wrote it

28069. With regard to the question of labour mentioned in paragraph 25 of your original memorandum (page 3 above), you say: "In all agricultural tracts there has been of recent years a distinct indication of a shortage of labour." This is a seasonal shortage, I presume?—It is a seasonal shortage coming at the time of the harvesting of the cotton crop. There has also been general shortage since 1919, although it is gradually being put right.

28070. Similarly, on page 13, paragraph 27 (page 4 above), you say: "There are areas of land commanded by irrigation which, because of labour shortage, are not utilised." In paragraph 31 (page 5 above), other reductions of labour are mentioned and at the end of the same paragraph quite a different point of view is put up. It is said that people are getting prosperous and can employ labour for themselves Do you think the shortage of labour is partly due to laziness?—I think it is partly due to the fact that some people, at any rate when they become to a certain extent affluent, object to doing much manual work.

28071. The higher wages enable the men to subsist by working less time?—I think that can be taken as a great truth

Mr. Wills: I may mention that during the influenza of 1919 this Province lost about 900,000 people.

28072. *Mr. Calvert:* What I am trying to get at is: to what is this shortage of labour due? Is it due to inefficiency of labour or to disinclination for work?—I think both factors come into it There is a genuine shortage of labour and there is disinclination on the part of the people who can afford to pay somebody else to work for them.

28073. *Prof. Gangulee:* Is there any emigration from this Province to Assam and other parts of India?—Yes.

28074. *Mr. Calvert:* Actually you have land which is cultivable, but which is not being cultivated?—There is a certain amount of it; I should not say there was a great deal of it in the Province.

28075. It is quite a big area?—Yes.

28076. What I am driving at is the tendency of the working people, the cultivators and others, to limit their work to what will bring in a bare subsistence?—I think there is a tendency in that direction.

28077. In paragraph 85* you say, "It is intended that seed and demonstration farms should pay." May I know what should they pay?—That means that they should give a financial return.

28078. Do you think it is a sound policy to start a farm with one purpose and then try to make it serve quite a different purpose?—A demonstration farm is presumably a farm which is intended to demonstrate how to do the best cultivation in a

* Not reprinted.

certain area. We demonstrate there the most economical methods of cultivating a certain area in order to give a paying return.

28079. A farm demonstrating better cultivation will be quite differently organised from a farm demonstrating the financial results?—A good method, to my mind, is the one that gives good financial results. The demonstration farm should give a satisfactory financial return on the area.

28080. On a demonstration farm, would you not naturally stock a larger number of implements than you would on an economic farm?—On a demonstration farm we are not so much demonstrating the implements as demonstrating the farming of a certain holding and combining with that the business of seed production. It is necessary to have extra supervision in order to get your seed pure. You have sometimes a number of small plots which you sow differently and sometimes there is overlapping between experimental work and demonstration work and that is the reason why we make a demonstration plot entirely demonstrative and not experimental. Even then a certain amount of experimental work creeps into the demonstration farm. It is really a seed farm. The term "demonstration farm" is perhaps a bad expression because almost invariably they are over-capitalised in the matter of buildings. You have got big seed stores which the farm would not normally carry; and you have overhead charges.

28081. Actually, so far as I know, I have never seen any farm designed to yield financial results. They are proposing to have one in England?—I think a demonstration plot should essentially be a plot to demonstrate the economic method of farming that particular holding and we are particularly careful not to put up very pucca building on it and also not to tie up a lot of money in capital charges.

28082. In your demonstration work you seem to appeal to the bigger landowners. The phrase "bigger landowner" repeatedly occurs in that note Do you think it is a sound policy?—I think it is because the bigger landholders are the more educated men, and it is easier to appeal to the educated man than to the illiterate man, if we can get hold of the bigger man, we can get hold of the smaller men also.

28083. You think the practice of the bigger man will filter down of the smaller man?—Yes, I think so.

28084. Is that justified by experience?—The bigger man is in a position to adopt any recommendation we make, he has a little more money behind him; the smaller man is not quite so easy to deal with.

28085. Has that been the experience in the immediate neighbourhood of your demonstration farms? Do you find your methods being copied?—Yes, I think so. I do not say that it is universal, but I do think there is a tendency to copy them.

28086. *Prof. Gangulee*: The bigger man is the malguzar?—He is the man holding a big area, he might be the malguzar, and generally he is a malguzar.

28087. *Mr Calvert*: Do the landowners to whom you refer themselves cultivate any large areas?—Not always, there are a good many absentee landlords.

28088. On the question of wheat you say that the impracticability of manuring dry wheat has been proved, what is the difficulty with a rainfall of 45 inches?—The rainfall comes at a season when the wheat is not on the ground.

28089. Can you not conserve moisture?—It does not seem to be a very satisfactory practice to manure, in the rains, land on which you are going to grow wheat and you cannot manure it in the cold weather when the land is not receiving moisture in the form of rain. If you put it on, then the ground is not sufficiently moist for the manure to decompose. It has, I think, been accepted pretty generally that the manuring of unirrigated wheat does not appear to be a profitable proceeding.

28090. Even with cowdung?—Yes.

28091. Does the area covered by your improved seeds roughly work out to about 4 per cent of the total?—It is something like that.

28092. There is very large scope still for further propaganda?—Yes. One does see nowadays, evidences of the propaganda of the Agricultural Department, but I remember a time when, in spite of the free distribution of implements, it was unusual to come across instances where they were being used, one does come across them now

at railway stations and other places. Only during Christmas time, I was out in a district and I saw some people threshing their rice. When I asked them what sort of rice it was, they told me that it was Government *bhondu*. As far as I know, no active demonstration work is being carried on there.

28093. I gather that you do not make it the chief point in planning your demonstration schemes that your demonstrator should be an actual cultivator?—No, but we do all we possibly can to encourage the cultivating classes. We would rather have a demonstrator who belonged to the cultivating classes; it is almost essential now. With an increase in the number of students in the Agricultural College, we can ensure that the demonstrators employed in the future will be men with quite a strong agricultural connection.

28094. You say in another place that the visit of an Agricultural Assistant to a village has not been the event in village life which it should be; is it because you have not drawn the demonstrators from the cultivating classes?—To appeal to the village you must appeal to them by eye as well as by ear, and we have not given our Agricultural Assistants sufficient facilities for making a good show. I want to have something definitely like an agricultural show, there must be something to put before the people; it may be diagrams, pictures, implements, or something of the kind. Even an oil engine driving a pump, as long as it makes a good deal of noise, is always a centre of attraction.

28095. Do you think the cultivator will learn as willingly from a man above him in caste as from one of his own class?—I think the cultivator will learn from any man, if he realises that that man knows what he is talking about and he talks with enthusiasm.

28096 He does not have a caste prejudice?—No I do not think so. As long as that man can show, on the surface at any rate, that he really knows something about agriculture and he talks agriculture, I do not think it much matters what caste he belongs to.

28097. I see that you lay great stress on the enthusiasm of the demonstrator but you do not mention his sympathy. Do you not think that demonstrator requires to be a man in full sympathy with the rural classes?—I think that it is really good to have a demonstrator who will be in sympathy with the agriculturist; that goes without saying.

28098. You are not insisting on your Agricultural Assistants being agriculturists?—We have not insisted upon it. It has worked out like that in practice, but because a man is not an agriculturist, you cannot say that he is not enthusiastic about agriculture. He may have drifted into the Agricultural Department because there was no other department which he could enter. In future, I think we shall be able to make a much better selection of our Agricultural Assistants.

28099. You say that the father does not appreciate the value of agricultural training for his son. Is that on account of any defect in the curriculum?—No, I do not think so, I do not think it is any question of the curriculum. It is simply that the father himself has not yet, in most cases, appreciated the value of instruction in improved methods of agriculture, he does not understand it himself.

28100. But you are up against the curious fact that your agricultural training creates a very strong disinclination to put it into practice?—Yes; generally, one finds that the people turned out from an agricultural college will go and farm themselves if they cannot get a post. To actually put their knowledge into practice on their own and is really the second thing; the first thing is to get a post and advise somebody else to put his knowledge into practice.

28101. You do not think it is due to any defect in the curriculum?—No, I do not think so.

28102. Have you tried in this Province any co-operative societies specially for the improvement of farming, like better farming societies?—No, we have not.

28103 You wish the system of *taccavi* to be made simple and speedy; have you any particular suggestion to make how to secure simplicity and speed in the distribution of *taccavi*?—Yes, but I would not like to put it forward now. If there was a man on special duty to take this thing up, between us we might be able to work out scheme It is a thing which I have discussed with Deputy Commissioners, how to make it easier and simpler.

28104. Every revenue officer in the country would like to see it more simple and speedy; it is a question of practical suggestions?—It is a thing with regard to which

one might work out a system. It has to be looked at from two points of view; the security must be safeguarded, and yet we should not hold to that security too tightly. In order to give *taccavi* quickly and when it is wanted, I think Government might take a few risks of losing the money occasionally, I think speed is the great thing.

28105. You do not happen to know whether the loss to the Province on account of the remissions of *taccavi* is at all heavy?—I do not think it is, but I could not say definitely without reference to the figures.

28106. You propose that a whole-time officer should take up the question of land mortgage banks; could it be done by the Agricultural Economist?—No, I do not think so. Of course, he would take up the question, but he would not have the running of such banks. He would have to formulate schemes on which these banks could be started, but he would not have the run of them afterwards. That would be the kind of work which the Agricultural Economist might take up to begin with, but as soon as it became a running scheme he would hand it on.

28107. I should like to have a clearer idea of this officer you propose for investigating underground supplies of water, would that officer be under you or under the Revenue Department?—It is so largely a question of domestic water-supply that I should be inclined to put him under the Public Works Department.

28108. Not under your department?—No.

28109. In one Province we find that the officer in charge of wells and borings is under the Industries Department, does that strike you as sound?—No, not particularly; he should be under the Agricultural Department or the Public Works Department boring for water is largely a question of the improvement of villages.

28110. Is this remark of yours, that the Province is not yet prepared for cattle-breeding societies, based on experience?—My idea in putting that remark in is that the whole conception of cattle breeding is in such a backward condition in the Province that until we get further on, see our way, and get some decent herds of cattle started it would be premature to start cattle-breeding societies. You ought to be able to give to such a society some clear line on which they can proceed, and which will lead them in a safe and sound direction. Until we have a little bit more experience and turn out herds which are valued and which are suitable to the Province, I should not be inclined to launch on cattle-breeding societies.

28111. You are rather inclined to put economic investigations of villages under the Department of Agriculture?—Yes.

28112. Do you think the Department of Agriculture has sufficient men with a knowledge of rural economics to guide this investigation?—Yes, if we had a man appointed for the post. I see no other organisation in this Province to take it up. I think we are more closely concerned with rural economics than any other department in the Province.

28113. It is rather unkind of you to put this work on your department. You would not object to the system obtaining in the Punjab of having a non-official body with a Revenue Commissioner as the President?—Not a bit, if you could do it, that would be all right.

28114. I think if you had got to spread your improved varieties of seeds over 96 per cent of your area, that is quite sufficient in hand for you without undertaking these additional duties from the revenue side?—I rather doubt whether we should be willing to take them on, but there is no reason why they should not be. We are the department more than all others closely connected, and our work is so bound up with the economic position of the rural inhabitant, that I think it is one of the functions of this department to go into that question.

28115. You are directly under a Minister?—Yes.

28116. Between you and the Minister, who is your Secretary?—The Revenue Secretary.

28117. Is he a senior officer of Government?—Fairly senior.

28118. He deals with the different branches?—He deals with agriculture, co-operation and industries.

28119. Cattle-breeding?—It is not a separate thing.

28120. Veterinary?—Yes, it goes up to him separately.

Mr. Kamat: You gave certain answers about the Pusa Institute, stating your view with reference to the position of Pusa in the agricultural hierarchy of the country.

28121. I would like to ask you one or two questions about that point in order to clear up certain aspects of the problem. When Lord Curzon instituted Pusa probably he did not contemplate the coming of the Reforms. Under the Reforms now you have the Transferred Departments and so far as agriculture is concerned, the Provincial Governments can go ahead as they like; you agree?—Yes.

28122. Under the Lee Commission's arrangements they can also, if they choose to do so, recruit any technical expert independently of the Government of India?—Yes.

28123. You told us just now that so far as your Province is concerned, in the matter of rice and in the matter of cotton research at any rate, you received the particular lead from Pusa by which you could recognise the special value of the Pusa institute; that is also correct?—Yes, in the case of rice.

28124. Now, in the first place in view of the constitutional position which I have just now described and also in view of the actual experience of this Province which you admitted in this matter, I should like to ask you what should be the future policy of recruitment, if Pusa is to be maintained at a high level, I mean when the time for recruitment of special experts arrives? Should men be recruited who are of world wide reputation, who could really be of use to the Provinces, or should there be men who are practically of the same calibre as one may have in the Provinces?—I think the calibre of the men at Pusa should be above that of men in the Provinces.

28125. That ought to be the guiding principle unless Pusa is to be continued in the position of something like the fifth wheel to the coach?—It should be a central institution to which provincial institutions could look for something better than they have in themselves.

28126. And in our future policy of recruitment, should research officers in the Provinces who may have done exceptionally good work, say, in rice or cotton or sugarcane, or anything else, not be taken up for Pusa?—I should make the recruitment to Pusa a world wide thing, to get the best men you possibly could at the price you could offer.

28127. Can you attract such men at the present pay?—I do not know; I do not know if the appeal for recruits is made sufficiently world wide.

28128. But if your first principle is to be accepted, you would not mind any scale of pay?—Any scale of pay that will attract the men you want.

28129 Now with regard to another point; You know in the Provinces the post of Director of Agriculture is held, in many Provinces at any rate, by men who are scientific men at the present moment?—Yes

28130. Now, speaking impersonally, will you kindly tell me which would be the better method, to have a Director of Agriculture who is an exceptionally good administrative officer, say, of the Indian Civil Service cadre, or to allow this post to be held by a man who ought to be really relieved for technical research work in the department? I mean if he is a Chemist, allow him to do research work in chemistry; if he is a Botanist, allow him to do research work in botany and so on instead of making him do the routine work?—Even if he is a Chemist or Botanist you want a man who has an all-round knowledge of the requirements of agriculture and therefore that man is not necessarily a bad adminisrative officer; he may be an officer who could get his colleagues to combine together, as well as an officer who is entirely administrative At least there is one aspect of agriculture in which he has detailed knowledge, but a purely administrative officer has none.

28131. In other words, the Director of Agriculture should know pre-eminently rural economics rather than be a technical or scientific officer?—He should be in sympathy with all sides of agriculture.

28132. Almost every officer is in sympathy?—But the man who has specialised in rural economics may not have any sympathy at all with the Botanist or the Chemist and to think bacteriologically may be an absolute nuisance to him.

28133. Now about this scheme of yours for a central fund to help the Provincial Governments in the development of agriculture, you suggest a cess on certain crops which are exported. Do you mean that it should be a flat rate of 8 annas for all crops or should it be, for instance, a rate of Re. 1 per ton for wheat, 8 annas for rice and so on?—When I first worked it out, as a matter of fact I put it down as flat rate of Re 1; but I thought it would be too much and I then put it down at annas 8. But this is only to give an idea of what I had in mind; it might be a variable rate; I should have a preferential scale, crops giving a large yield paying more and crops giving a smaller yield paying less.

28134. You agree that some sort of a scale would be desirable?—Yes, it should be on a moveable scale.

28135. On page 24 of your note regarding this grant to Provincial Governments from the Central Fund you say that once the grant is made to a Province, the Province should be given a free hand and there should be no control by the Government of India. Is that workable?—I think it would be workable. There have been cases before where the Government of India made allotments to Provinces for certain purposes.

28136. Without asking for interference?—They give a grant for certain schemes

28137 Unconditionally?—The scheme is first put up for their approval. We say "we are going to do such and such a thing, we may open agricultural schools, we may employ a Botanist for rice." But when once a scheme is considered sound I think the provincial department should be allowed a free hand to carry on the work.

28138. But because they give a grant, supposing they want some sort of direct or indirect interference would the Ministers tolerate that?—I do not think the Minister would mind it if he were getting the grant from an outside fund for a certain bit of work. A report would be made on how the work was going on, and so on.

28139. You suggest a Provincial Veterinary Research Institute. Do you at the present moment take advantage of the Imperial Veterinary Research Institute?—A good deal of advantage is taken of that, not directly by the Agricultural Department, but more directly by the Veterinary Department.

28140. You want to separate the Research Institute from the Provincial Veterinary Department because you think the Imperial Institute is too far away or because it is not sufficient?—The problem is so big and so local in importance that both institutions might well be provided for.

28141. You make a very significant statement regarding the middle class youth: "Agriculture will be more attractive to middle class youths when it is made more profitable and when the general conditions of rural life become such that educated men can feel there is full scope for their energies and abilities outside the urban areas". Now, I read this in conjunction with another paragraph on page 6 of the Provincial Memorandum simply to bring out one aspect of what I might call the agricultural psychology of the people. The statement runs thus "Many of the holdings (in the cotton tract of Berar) are of a good size and many of the bigger landowners take an active interest in agriculture". And you depict a picture how it has led to a rapid growth of gins and presses and to a better realisation of the value of machinery and of improved implements and so on. That only goes to prove that if people see there is profit in the efforts they put in, no inducements by the department are necessary; am I right?—If it is profitable *ipso facto* it becomes attractive.

28142. And, conversely therefore, in some Provinces where agriculture is not likely to be profitable either because the holdings are only of 2 or 3 acres on an average or because the tract might be dry whatever the efforts of the people or the department, progress in agriculture must be *ipso facto* very very slow owing to sheer despair; do you agree?—Yes.

28143. And it will be very difficult to improve conditions where nature contends against man?—Yes.

28144. Will you kindly give me some further information about the demonstrators which you hope to have when you expand your department. You have at present only 21 demonstration plots. Of what character are they? Are they on the cultivators' fields?—We get small areas on annual lease for five years; there is not one close here, otherwise you could have seen it; there is one in the adjoining district.

28145. The point I am driving at is not the size of the plots, but the proportion their number bears to the four circles?—You mean 21 are not enough?

28146. Yes?—I think we want more. In fact, in my opinion, we want one such plot within easy reach of every village.

28147. I think you have stated in this memorandum that you have in all 83 taluks and that you hope to have later on at least two *kamdars* to look after the demonstrtation work in each taluk; is not that the case?—Yes.

28148. You have at present only 21 demonstration plots for 83 taluks. I wonder how many villages there are in each taluk on an average, 75 villages?—More than that.

Mr. Wills: About 400 villages in each taluk.

Mr. Kamat: Very well, multiplying 83 by 400 you get an enormous number of villages and I am just trying to point out that the 21 plots which you have at the present moment for these thousands of villages are hopelessly inadequate.

28149. In this Province, is there no conflict between your department and the Irrigation Department? In some Provinces, we have heard an entirely different story. For instance, how do they distribute water for sugarcane: is it by the acre, or by turns to each cultivator as he applies?—On the days on which it runs down the channel the water is given out If you would, I should like you to take evidence on this point from actual cultivators.

Because in some other Provinces, the Irrigation Department has almost come to be called the "irritation" department.

28150. *Sir Thomas Middleton*: Is the Agricultural Department responsible for the supply of statistics to the Government of India?—No, that is done by the Director of Land Records.

28151. So that you have no responsbility except to assist with the crop experiments?—Yes, and a general survey of crop forecasts.

28152. Do you make that survey in consultation with the Director of Land Records?—We put up our general notes on some of the crop forecasts; for instance, we are chiefly concerned with the final forecast on cotton; the Land Records staff are at liberty to consult the agricultural staff as much as they require.

28153 In answer to Mr. Kamat you agreed that the men employed at an Imperial Research Institute should be of a somewhat higher calibre than the average men who are employed in research work in the provincial departments?—Yes.

28154 Apart from the men, could you distinguish in terms of work between the types of activity that should be undertaken by central departments and by provincial departments?—No, I have not been able to distinguish between the types of work at all.

28155. I think you are a chemist who has given a good deal of attention to soil chemistry?—Yes.

28156. Do you think it would be practicable for a central institution like Pusa to take up the general question of what one might call the soil balance?—I think the question is rather too large a one to be brought under one head like that.

28157. Large in what sense?—It covers too big an area

28158. It is not very large in the other sense that it requires the collaboration of a number of very specialised workers?—That is so.

28159. Would it be possible provincially to get the group of specialised workers that would be necessary to study that subject in all its aspects?—It should be possible, and it would be possible, provided funds were provided; I see no reason why work of that sort should not be done in the Provinces.

28160. In addition to at least one and possibly several chemists, you would require men who had specialised in protozoology, bacteriology, and soil fungi?—Yes.

28161. And, even if the funds were available, do you think it would be possible to secure a staff of that sort to work in a provincial area?—I think so, because there should be no difficulty in getting a staff of that kind, provided men were trained for it if the need was felt and it was considered to be a a work that should be done; because if you were going to tackle a question like that at a central institution, you would

want a very much larger staff of the same type of men to deal with the problem for the whole of the Provinces.

28162. You would certainly want a larger staff, but many of the persons employed would be of the Assistant grade working under experienced officers. Your objection is that the conditions in India vary so widely that one central institution could not tackle, as Rothamsted does for England, this particular question?—Yes, and a man must be, I think, very much in touch with the Province in which he is working.

28163. Would it not be possible to get over the difficulty of touch with the Provinces by arranging for co-operative work *e. g.*, sampling and certain other matters being taken up locally, and the subject worked up at a central institution?—It would be possible, I think, for some of the work to be done in the Provinces and some at the central institution.

28164. You recognise that for work of this discription continuity is essential and continuity over a long term of years?—Yes.

28165. Do you think that if this question were tackled locally in Indian Provinces, there would be much prospect of securing the continuity which is required?—There is a danger of the work being broken off in the Provinces; on the other hand, if it were financed from an outside source where the funds were likely to be permanent and continuous, I see no reason why it should not be carried out in the Provinces.

28166. If you had endowments?—A fund which you knew was likely to continue for a good many years.

28167. Do you think that work on such a subject as animal nutrition should be centralised or worked at provincially?—There is a good deal of work that can be done in animal nutrition at a central institution, fundamental work, but I do not think that should in any way present or displace work of the same type which could be done in a provincial institution.

28168 It is obvious that if there is work of a fundamental character in progress at a central institution, it would be necessary to have local work carried out on problems arising at the central institute?—Yes.

28169. For work of the fundamental character to which you now refer, do you agree that it should proceed under the Agricutural Experts of the Government of India, or would you prefer, as in the case of soils, that strong local departments should be developed?—I think work of that kind which is very new to India might as a start be done at the central institution, but I think it would be necessary to develop that work in the Province, because, wherever the central institute is situated, the conditions there may vary tremendously; for instance, I am not sure that all the work which is done at Bangalore, which is in a very nice climate, would be quite applicable to the conditions prevailing in the Central Provinces in the hot weather.

28170. I have mentioned two examples; are there any other lines that occur to you at the moment for which it would be desirable to work centrally rather than provincially?—Such a thing, for instance, as agricultural meteorology, of which we practically know very little in this country, might be started at a central institution. We could not very well start that in a Province, because, to begin with, there is no staff; one does not know quite where to obtain a suitable man.

28171. That is a subject we have recently started to work at in Britain, and in that particular case we have had to start most of the work locally?—We have established crop weather stations in a number of areas and the results are worked up centrally? But I think the Province would need a lead in that respect; we are rather in the dark regarding agricultural meteorology. Then again, on such a thing as soil physics, as a whole we are rather in the dark about that. Although problems would have to be worked out locally, it would be well to get a lead from some central institution where they could probably employ a much better man for a certain number of years than we could hope to employ in a Province or in a number of Provinces.

28172. Have you in your work as a soil chemist felt the need of a physicist?—Yes, more and more so.

28173. And you have felt that if there were a physicist available at a central institution he would have been of use to you?—He would have been very useful for consulting on various points.

28174. You have at present a 2 years' course and also a 4 years' course at Nagpur. We found in another Province that the demand for the 2 years' course had disappeared. Do you anticipate a falling off in the demand for the 2 years' course in Nagpur, or are the prospects good?—The 2 years' course will take rather a different type of man from the 4 years' course; the 4 years' course is a much harder course. The 2 years' course provides for a man of a rather lower intellectual standard, and perhaps a poorer man who could not afford to remain at a college for 4 years.

28175. The idea, I think, of this 2 years' course was to prepare men to go back and farm on their own estates?—Yes, and to act as agents for other estates, and so on.

28176. My point is whether there is likely to be employment for such men in the Central Provinces?—I think there would be to a certain extent, because men of that type will always be obtainable at a much lower rate of pay than a man who has had a 4 years' course and has taken a degree At our present rates of pay for men of that kind, we start the 2 year men in the department at Rs. 50 a month, and the 4 year men at Rs. 70 and Rs. 80 a month.

28177. In reply to the Chairman you expressed the view that perhaps too much attention had been paid to agricultural science and too little to economics?—I think that was probably so in the early days of the teaching of agriculture.

28178. I notice that now you do a good deal of economics in the final year at Nagpur?—That has been a gradual change in more recent years. Much more economics is taught now than when the agricutural college started, probably because there is much more material available.

28179. You have just stated that the initial pay given to the 2 year man who enters the Upper Subordinate Service?—The 2 year man enters the Lower Subordinate Service on Rs. 50 and the four year man enters the Upper Subordinate Service on Rs 70 or Rs. 80. As a matter of fact, we have not yet recruited any man of the degree course because the college has only been afficiated about a year; but we have been recruiting men who have taken the longer course, on Rs. 70 or Rs. 80 according to the standard they reach at the final examination

28180. What is the pay on recruitment of men who enter the laboratories as Assistants?—We only take those men in the Upper Division, they come in on Rs. 80 because the recruitment to the scientific sections is rather less and we only have a few of them: they have to be the very best men.

28181. Do you agree that besides being the best men they ought to be men who had a rather different training, a more specialised training?—They must have post-graduate training, we feel a need for that; in fact, we are now beginning to recruit graduates in pure science and then give them a specialised training.

28182. You point out that a bureau to summarise the work done in the Provinces would be useful, is not that already provided by the Advisory Council of Pusa in connection with the publications of the memoirs?—The only work that I know that the Advisory Board does is to scrutinise the memoirs.

28183. It is laid down as part of their duties that they should edit the memoirs?—I think also there is rather a feeling in the Provinces that a memoir in any particular subject should be scrutinised rather more by a board of men with special knowledge of that subject than by a general advisory board such as the Pusa Board. For instance, if a botanist sends in a memoir it would be better that that memoir should be scrutinised by a number of botanists than by a general advisory board.

28184. I think that is done; it is laid down that such papers may, at the discretion of the Council, be submitted to selected readers nominated by the Council. That does carry out your suggestion: they would obviously submit a botanical paper to botanists?—I have known that feeling to be expressed amongst provincial officers.

28185. You point out that the Agricultural Department would welcome any improved methods for wider and more timely discussion of weather forecasts. How do weather forecasts reach you: through the newspapers or by special telegrams?—They do not reach me personally at all, I do not get any weather forecasts; I only get the local weather conditions.

28186. Through the newspapers?—Yes.

28187. Is not there an arrangement by which the department is directly informed by the Meteorological Office?—There is no arrangement existing at present.

28188. You draw attention to the value of *karanja* cake for sugarcane; have you been conducting any experiments with that material?—Yes.

28189. What is the composition? Can you give the percentage of nitrogen?—It is between 4 and 4½ per cent; very much like castor cake, it is one of the rapidly acting cakes.

28190. So that it has two qualities essential in a manure for sugarcane?—Yes. I might say that when we started work on that it was bought at an extremely cheap rate; since we began to advocate its use its value is now appreciated, has risen and the market rate has gone up.

28191. I think you point out that the best cattle in the Central Provinces are to be found in the areas in which there is least grazing?—Yes, that is so.

28192. Can you tell us how the cattle are fed in those areas during periods of scarcity, that is between February and July?—The particular part which is referred to is Berar where a good deal of *juar* is grown; they are fed on the *juar* stalk which is stocked for the purpose.

28193. Is cotton seed not used?—Yes, it is used as the concentrated food and the other as the bulky food.

28194. Is cotton seed the main concentrated food?—Yes.

28195. And that they have in abundance in Berar?—Yes.

28196. You also point out that there is a decided tendency in recent years to cut down the area left as grass borders in tilled fields? Are these fields enclosed or open fields?—Open fields.

28197. The advantage of grass borders can only be secured in an enclosed field?—The grass border in the open field is the only place where the cattle can graze

28198. It is really comm on pasture ground?—Not always. It is just the border where the cattle can graze.

28199. In answering a question put by the Chairman I think you used the expression that if found economically desirable the cultivators will take up fodder crop growing I do not quite follow the *if* there. As I see the position in the Central Provinces you have a scarcity of labour and a need for labour-saving implements, to use these implements effectively you must have good cattle?—Yes, but one has to convince the people that this is an economic suggestion, and economic practice that it is worth doing.

28200. So that the *if* is in the mind of the cultivator, and not in your mind?—No.

28201. You have a scheme here for using the forest areas for breeding purposes I take it that you are thinking of bullock breeding and not bull breeding?—In the early stage it will be bullock breeding until we have established a really good herd with which we hope to turn out bulls. The ultimate object is a bull breeding centre, but in reaching that object we shall produce a good number of bullocks and shall continue to produce where the animals are not up to the standard of bulls required.

28202 I hope that before that time comes you will have removed the *if* from the cultivator's mind?—Yes; as a matter of fact when a man has an animal that he really values he takes the trouble to feed it. This is particularly the case in the cotton tracts, because there the animals are of a higher class.

28203. *Mr. Kamat*: I have just one or two questions to ask you. In this Province, you have attempted to achieve one or two things and one of them is the regulation of the cotton markets in Berar. On the whole, do you think the rules are successful?—As I said before, in theory I think they are successful; in practice difficulties arise.

28204. In framing them was the initiative taken by the Indian Central Cotton Committee or was it by the Local Government?—It dates back before the days of the Central Cotton Committee.

28205. So that it was the Provincial Government which took the initiative and framed the rules?—It was a local body of some kind, I am not sure at this date whether it was the Local Government or the local market committee, but the framing of these rules was taken up long before the Indian Central Cotton Committee was started.

28206. Do you think that similar rules are capable of achieving some success even in other markets like grain markets?—I think so.

28207. You think that the experiment is worth trying?—Yes, I do.

28208. Now about consolidation of holdings, although you do not like to go into details about consolidation in Chhattisgarh, I dare say you can just give me a rough idea of what you have been able to achieve in this Province?—The consolidation of holdings is not under the Agricultural Department at all. It is either under the Commissioner of Settlements or the Commissioner of the Division. All the information that has been supplied has been in the form of pamphlets, but the Agricultural Department has not come into the scheme as yet.

28209. And you have no opportunity of observing the principles on which it was done in Chhattisgarh?—It is only just being done here.

28210. I am asking you because another Provincial Government, Bombay, is just introducing legislation, in fact it has framed a Bill and I imagine certain principles of consolidation which you by experience may have found essential here may be of some use or application in that Province?—I think the position in Bombay is very much the same as it is here. We are feeling the way.

28211. But here one advantage is that you have got the malguzari tenure system which applies to the whole village and not to each cultivator, so that this consolidation is probably facilitated by the fact that you have a specially convenient tenure here?—No, I do not think so. It was started owing to the fact that the great necessity for it forced itself on our notice

28212. You think the principles of consolidation tried here are also likely to succeed in the case of ryotwari tracts?—I could not give you an opinion on that.

28213. *Prof. Gangulee*: Is there any demand from the public or the department?—There is a great demand from the public, but whether it will work out or not we do not know.

28214. *Mr. Kamat*: Do you think that consolidation would not be sufficiently successful merely by the spontaneous efforts of the cultivators?—I very much doubt it.

28215. And legislation is the only method on which one can rely?—I think legislation is necessary.

28216. *Sir Henry Lawrence*: You have a budget of about 17 lakhs?—Yes. It is between 11 and 14 lahhs for agriculture alone.

28217. That is about 3 per cent of the revenues of the Province?—I could not say without referring to the figures.

28218. And how much do you want?—I put up schemes for an additional two to three lakhs. We might continue that almost indefinitely.

28219. Would you spend usefully an increased sum of two or three lakhs a year for an indefinite number of years?—Yes, provided we get the staff, and I think that we shall get the staff more easily in the near future.

The Chairman: That is the limiting factor.

28220. *Sir Henry Lawrence*: If you can get the staff to continue the expansion of your department, you can increase your expenditure, between two to three lakhs every year for some years to come, up to a total of 30, 40 or 50 lakhs?—Well, I have not looked so far ahead, but I think we can easily do with 30 lakhs at no distant date.

28221. *Sir Thomas Middleton*: You are thinking of the expansion of the district offices mainly?—The expansion of all sections.

28222. *Dr. Hyder*: Supposing you were a cotton grower in the Berars, what dues would you have to pay if you carted your cotton to the market?—It all depends on how I sold it; if through a broker I should have to pay his dues.

28223. But supposing you brought it yourself on a cart, you would have to pay Rs. 2 for octroi duty and for the market two annas a cartload?—Something like that but I am not sure what it is.

28224. And there is in addition, what is known as forced charity for which you pay another 2 annas?—As a matter of fact, the information supplied by this Government is as follows: Rs. 2 octroi; 8 annas market charge per cart of about 600 lbs. and 3 annas brokerage for 400 lbs. These are the figures given on page 10, paragraph 22 (page 3 above); I do not think that is the case in Nagpur.

28225. Is this rate of duty general? Does it apply to all tracts?—It varies from place to place. The Nagpur rate is a particular rate.

Mr. Wills: It has just been reduced at Nagpur from Rs. 2 to Re. 1.

28226. *Dr. Hyder:* Do you regard that as a healthy sign?—Yes, from the point of view of the cultivator.

28227. Because the duty is initially paid by him?—Yes.

28228. You speak of the cultivator having a share in the general educational movement. Have you come across many *Chamars* and *Mahars* who have benefited by the establishment of primary and secondary schools? Take the Chhattisgarh Division in which these two castes—*Chamars* and *Mahars*—predominate. Have they benefited by these schools?—I could not say because I do not know the number of *Chamars* and the lower castes attending the schools.

28229. Have you ever come across a *Chamar* who was a matriculate in the Central Provinces?—I cannot think of any *Chamar* at present, but I know of some other low caste men who have matriculated.

Sir S. M. Chitnavis: Mahar graduate, not *Chamar*?

28230. *Dr. Hyder*: *Chamars* and *Mahars* in the Chhattisgarh Division are purely cultivators?—Yes.

28231. I thought that these were the people with whom you had to deal as Director of Agriculture?—We have only really begun to teach the agricultural population to the extent that we see it worked out, and naturally it is easier to deal with the literate than with the illiterate class

28232. How are you coping with this nuisance of *kans* grass?—By ploughing it up with suitable ploughs.

28233. And you have had success?—Yes.

28234. How are these crop forecasts prepared here?—They are prepared entirely in the office of the Director of Land Records by the land revenue staff.

28235. Do you know anything about them?—Yes, only with regard to cotton for which we are responsible.

28236. Could you define the term 'normal' or 'standard outturn'? What do you mean by those terms?—Normal outturn is an outturn which a man would generally expect.

28237. Is that your standard outturn then? Would that be your standard outturn, taking good and bad years alike?—Yes.

28238. When the Revenue Department institutes these crop-cutting experiments they carry them on over a large number of years and then come to some decision as to the normal or standard outturn?—Yes.

28239. Are both those terms the same?—I think they are.

28240. You measure your normal outturn in terms of annas. 16 annas standard crop?—No. That is more than the standard. 13·3 is the normal.

28241. Your standard would be 13·3 also?—Yes, expressed in an anna outturn.

28242. If I asked you to prepare a crop forecast, you would have to look at the crop and take its condition into account. How are you going to correlate the estimate according to your eyes with this standard of normal outturn? Will it be in terms of annas?—Yes, above or below normal.

28243. Then you have to correlate that with another quantity, the yield in maunds or whatever your unit of measurement may be ?—Yes.

28244. From that you find the outturn ?—Yes. The normal outturn of wheat in a certain district might be 600 lbs. an acre, and that would be the 13·3 anna outturn.

28245. *Sir Henry Lawrence:* Do you deal with this estimation officially ?—No.

28246. *Dr. Hyder:* In your opinion, is the Revenue Department qualified to undertake work of this kind ?—The great point is that in order to eliminate anything above or below the average you must get a large amount of data. The revenue authorities are able to collect far more figures than we can. We have only one Agricultural Assistant for every two tahsils and he is a junior man without much experience and cannot give a very valuable opinion. He merely consults leading cultivators on what they think the outturn is. On the other hand, the revenue people can collect far more figures than we can and by collecting a large amount of data like that the extremes are eliminated.

28247. How many ploughings do you give for wheat in Berar ?—It is not usual to give many.

28248. Do you think you would get a larger outturn with an increase in the number of ploughings ?—It is satisfactory to give deep ploughings every few years to help to retain the rather low rainfall in Berar.

28249. You said in reply to a question by Sir Ganga Ram that much of the rainwater drains off the land. Is soil erosion a serious problem in your part of the world ?—In a good many places it is. Sir Ganga Ram was talking chiefly of irrigation tanks, which are generally constructed in districts where the rainfall is high rather than in Berar where the rainfall is generally low

28250. Looking at the natural configuration of the country, it seemed to me as if soil erosion would be an important problem here ?—In many places it is very serious.

28251. You are benefiting Bombay at your expense. The Tapti carries a lot of water ?—It carries some, but most of the rivers flow to the other side.

28252. With regard to the diminution of the area under wheat, has this taken place entirely in your main wheat tract ?—There has been a big reduction in the wheat area in Berar in recent years There is not a very heavy rainfall there and, with the rise in the price of cotton, land that used to be under wheat is now being put under cotton.

28253. Has there been a diminution in the wheat tract ?—Not a serious one.

28254. Do you know anything about the cost of raising wheat ? Has that gone up ?—The cost of all agricultural operations has gone up with the rise in the price of labour, seed and so on.

28255. Was there much importation of wheat into the Central Provinces 25 years ago ?—I should think there was a good deal.

28256. Has there been any increase since in that importation ?—Not that I know of.

28257. Apart from this question of substituting cotton in the Berars, you are in a position to import more wheat and therefore you do not grow more ? This explains to some extent the diminution of the area of wheat in your northern tract ?—Yes.

28258. *Mr. Wills:* It is due to the expansion of cotton owing to its high price ?—A good deal of land has gone out of cultivation owing to the growth of *kans* grass. If that is brought back it will increase the area under wheat.

28259 The *kans* grass has affected the wheat area ?—Yes, to a greater extent than the cotton area.

28260. *Sir Henry Lawrence:* Is this figure of 13·3 for normal outturn the figure accepted by the revenue regulations ?—I think it is. It represents the outturn which a man has a right to expect.

28261. *Mr. Wills*: We had a system by which 100 was regarded as the normal and 120 corresponded to the 16 anna crop, 100 being equivalent to 13·3 annas, which is regarded as the normal. That system has been changed?—I am not sure when the change took place, but 13·3 is now the normal crop. 16 annas is a full crop and 20 annas would be a bumper crop.

28262. *Prof. Gangulee*: With regard to facilities for post-graduate training, how many students do you know of who have gone to Europe for advanced studies in agriculture?—A good many have been to America and I have had three men come to see me in the last month or two who have trained themselves at their own expense, two abroad and one in India.

28263. Do most of them go at their own expense?—A good many do.

28264. In view of those circumstances, do you think it would be better to have such facilities in India?—The trouble with these men who come back with this training is that it is difficult to find them employment, and until we can see how to find employment for men who are already trained at their own expense I should not be prepared to suggest any further facilities for training men in India.

28265. Do I understand that you would not have any post-graduate training either in India or abroad?—I would not give any particular facilities for it at present until we see how things develop. We do not want to create the men before we create the posts.

28266. You would agree with me that the development of agriculture depends on our getting the best men?—Yes.

28267. Would you like to see Pusa developed into a sort of Rothamsted in India?—I should.

28268. Both for central research work and post-graduate training?—Yes.

28269. Are you a member of the Board of Agriculture?—Yes.

28270. Would you tell us what you think of that body and how it functions?—The difficulty is that there is no force behind their recommendations. Their recommendations, in many cases, have been excellent, but there was nothing to press the local Government or the provincial department to put them into operation. There have been many occasions on which additions to the strength of provincial departments have been strongly advised by the Central Board of Agriculture, but when it comes to finding the money, the provincial departments cannot always get it, and so this advice falls to the ground.

28271. You have already given us an idea of your research work; are any experiments for the purpose of retention of soil moisture being carried on here?—Most of our cultivation experiments, deep ploughing cultivation, different implements and so on, have as their main object the retention of soil moisture.

28272. You are tackling the problem of dry farming?—Yes; a great deal of the farming in the Central Provinces is nothing but dry farming.

28273. Have you explored the possibilities of introducing hemp cultivation?—A good deal of hemp is grown in parts of the Province.

28274 Are there great possibilities in that direction?—It must be remembered that hemp is a crop which all cultivators will not touch.

28275. Why?—There is a prejudice against it; it is not a crop of universal application.

28276. *Prof. Gangulee*: I was asking about *sann* hemp?—*Sann* hemp will only be grown by certain classes. There is not much reluctance to grow it as green manure, but as far as the processes of retting and preparation of fibre are concerned, there is definitely a disinclination on the part of many classes to touch the crop.

28277. Even if it pays?—Yes, even if it pays.

28278. On page 39 of the Provincial Memorandum, a statement is made that the water requirements of the wheat crop have been worked out under different soil conditions; could you kindly submit to the Commission a statement showing the results of your experiments?—We could get a statement of the kind prepared, if you would like to have it.

28279. We have had considerable discussion on water requirements?—This is for the wheat crop.

28280. Have you extended it to sugarcane?—We have a good deal of information regarding the recommendations for the amount of water to be put on to various crops, and I think I could collect it for you.

28281. Are these results obtained by following Dr. Leather's work at Pusa?—These are field experiments.

28282. If I understand aright, the chief achievements of your department is the supply of pure seed of rice and cotton?—Yes and wheat.

28283. Do you certify pure seed growers?—We recognise them.

28284. You do not certify them?—We do not give them a certificate; they are recognised by us as pure seed growers.

28285. What step is then taken to ensure the continuance of pure seed?—The growing crop is carefully inspected by officers of the Agricultural Department.

28286. From the chart that you have given us, I see that you have Seed Unions here?—Yes.

28287. Could you tell us the function of the Seed Unions?—The Seed Unions are organisations for the continual propagation of improved seed. They are working quite satisfactorily in this the rice tract. They worked for a long time in Berar, but in recent years they have rather fallen on evil days; they are only a partial, success; owing to the prevalence of wilt in cotton, a wilt-resisting variety is wanted. I think, as soon as we have a variety of cotton which will meet present demands, these cotton Seed Unions will function again. The essential thing for a Seed Union is that it should supply seed which is in great demand.

28288. As far as the rice tract is concerned, they are working quite satisfactorily?—Yes.

28289. In answer to Mr Calvert, you stated that you proposed to make demonstration farms pay?—We propose to make demonstration plots pay. We should like to make demonstration farms pay but they are combined with the seed business, and for that particular reason they are in many cases rather over-capitalised.

28290. I see that the cost per acre in that farm is Rs. 111?—Yes. That is the Waraseoni farm, but a good deal of that is sugarcane.

28291. Do you think you can make that farm pay?—I think so.

28292. With regard to the difference in prices between the rice tract and the cotton tract, how does the price of food grains within any rice or wheat tract compare with that in the cotton tract?—Food grains in the rice tract are the cheapest.

28293. And the wheat tracts?—There is not much difference between the wheat tracts and the cotton tracts. I should think that the cotton tract is a little bit dearer altogether.

28294. I am talking about food grain prices, not cotton prices?—I should think that the prices in the cotton tracts are dearer than those in the wheat tracts, and the prices in both the cotton and wheat tracts are dearer than those in the rice tracts.

28295. *The Chairman:* I cannot understand the position as it exists with regard to the malguzar who lends money to the cultivator on the security of his land. He is of the same class, as a rule, as the cultivator?—Frequently.

28296. So, it does not mean that the land passes from the cultivating classes to the non-cultivating classes?—Not necessarily.

28297. Although, on occasions, it might do so?—Yes, if the man advancing money happens to be of another class.

28298. I think you may like to know that a gentleman, Rao Bahadur M. G. Deshpande, whose written evidence is before the Commission, tells us in his answer to our Question 3 on Demonstration and Propaganda: "My experience as a member of the Board of Agriculture, Central Provinces, shows that money for research is generally comparatively easy to obtain, but the provision of funds for propaganda is almost ludicrously inadequate". Have you anything to say on that?—I think, comparatively speaking, far more money goes into propaganda than into research, but the propaganda work covers the whole of the Province and its needs of course are far greater, there is no comparison between the two objects.

28299. I want you to understand Mr. Deshpande's point, that the provision of funds for propaganda is ludicrously inadequate; he complains that propaganda does not get enough?—That is quite so, because we want to double our propaganda and extension staff by increasing the number of Agricultural Assistants. Now, if we double the number of Assistants in, say, the botanical section, it would mean adding on perhaps six men, whereas, if we double it in the demonstration and extension section it means adding on perhaps hundred men.

28300. Are you satisfied yourself that the balance between the two sides of the budget is good?—I should like to expand demonstration work quicker, but then of course it takes far more money to do that.

28301. Will you tell the Commission, quite shortly, what the experience of this Provincial Government has been in its attempt to provide vocational middle schools in agriculture. The Provincial Memorandum, on page 53, paragraph 114 (page 22 above) says: "Certain attempts have, however been made to meet the demand that definite agricultural instruction should be imparted in rural schools. The most important of these was the opening of two schools in the year 1918-19, one in the wheat tract and the other in the rice tract". Could you give the history of these two schools?—These two schools were started largely as vocational schools, that is, to take boys, of an age from 11 to 14, and teach them the rudiments of agriculture, based on a primary school course. One school is at Chandkhuri, 16 miles away from Raipur, and the other school is at Powarkhera, which is 4 miles from Hoshangabad. The conditions in those two tracts are entirely different, and we have a different type of landholder The Hoshangabad landholder is much more enterprising and rather more advanced; the local man here is, as a class, rather backward. Neither of these schools really caught on, for various reasons, and we did not have the boys coming to them.

28302. Were those schools of the Loni type? Are you familiar with the Loni type of school?—I have heard a good deal of the Loni type of school. In these two schools agriculture was being taught as a vocation, the boys were being taught technical agriculture. As soon as it was found that no posts were obtainable, or at least that they were not guaranteed although in some cases they were obtainable, the number of boys gradually fell off; the whole question of vocational training was carefully gone into by the Central Provinces Government, and they came to the conclusion that these schools should be closed. But, at the last moment, I was able to get the Director of Public Instruction to modify his draft resolution to keep on the Powarkhera school and to give it a fresh start with a changed syllabus. We made general education, including English, the feature of the school, coupled with agriculture; not agriculture as the primary thing with a certain amount of general education added, but general education with a certain amount of agriculture. That caught on, and a large number of the cultivators in the locality were very keen on this school and they sent their boys to it. They had got people from a number of places, and eventually got this school recognised as an agricultural middle school; that means that the boys of the school are now able to proceed to the high school and from there will be able to matriculate, and we hope that in years to come those of the boys who go to high school will provide some of the best recruits to the Agricultural College.

28303. Do you teach them English still?—We teach them English. The change we made in the ordinary middle school prospectus, which the Education Department accepted, was that instead of natural science we should teach agriculture and instead of drawing we should teach field surveying; that is about all the difference.

28304. *Prof. Gangulee*: Is agriculture taught by the ordinary teacher?—The ordinary teacher of the school, assisted if necessary by the Agricultural Assistants

on the farm. Originally—the masters were all given a special training at the Agricultural College. That school is now full, but as it is still in the nature of an experiment, we are not adding to the permanent buildings; we are trying to find out how it goes on; it appears to be a success, but we shall not really know about it for a year or two, until we see what the future careers of the boys are. But there is a very strong demand for a school of that type in other districts. The school is extremely popular, and we have had to turn away a large number of applicants. We are asked to make provision for 100 more boys. In order to provide the teaching staff, we had to transfer to it teachers from other schools. It is a 4 years' course; agriculture is one of the subjects on the curriculum, and they have a certain amount of practical work. I believe that the practical work is a genuine thing; I have often paid surprise visits to the school, and have found the boys engaged in real practical work.

28305. *The Chairman:* And the school is in your budget?—It is entirely under our control.

28306. What prospects of official employment has the boy who goes there today?—We offer them no prospect of employment at all. We hope that his father, if he has no intention to send him to the high school, will take him back on his own land.

28307. You have not yet had time to judge the results?—It has been going only for a short time: the first batch of boys from the school are entering the high school this year.

28308. *Sir Thomas Middleton:* Were these schools started as a result of the conference on agricultural education at Simla?—Yes.

28309. *The Chairman:* What do you mean exactly when you say they are based on a primary school course; do you mean there is a primary section linked?—They come to us from the primary school.

28310. You have not got a primary section linked to the school?—No, but the present arrangement is entirely experimental, and though there is a big crowd at the school we have not spent money on *pucca* buildings, because we want to see how the experiment works.

28311. Can you tell the Commission whether you know definitely of any parents who have sent their boys to the school, with a view to their being more efficient cultivators?—No, I cannot say that they have sent them there because they want them to be more efficient cultivators. A good many parents have sent them there because they wanted their boys to have an education which would fit them to go back to the land, and also some boys were sent there because they were boys who were going back to the land and they wanted them to have a general education of the standard given to other boys of the same class.

28312. Do you think you see any signs of a growing demand for general education amongst cultivators for their sons?—Yes; in certain tracts particularly.

28313. In particular tracts, you definitely see an increase in the demand?—Yes; I think, at the present time, we could open a number of schools of this type, but I do not know how it will be in four or five years' time, when they have seen what it leads to.

28314. You are going carefully?—Yes, entirely as an experiment. You will have an opportunity of seeing the school on the 29th. The other school is closed.

(The witness withdrew.)

APPENDIX.

Note on Silage making in the Central Provinces and Berar by Mr. S. T. D. WALLACE, Deputy Director in charge, Animal Husbandry.

Previous to the year 1920 the making of silage was confined to the Agricultural College farm on which a tower silo had been built for demonstration purpose in connection with the teaching of the students. Excellent results were obtained from the use of pit silos on Telinkheri Dairy farm during the year 1921-22 in consequence of which pit silos were constructed on all Government cattle-breeding farms in the Province during the following years. The pits were in nearly every case filled in with green *juar* which had been passed through a fodder cutter driven by a small 3 H.P. engine. The pits were in the majority of cases filled at the end of October and opened at the end of April. It was found that cattle very quickly learned to eat the silage and after a few days ate it greedily.

In October 1923 two demonstrations were given in Wardha district. The engine and fodder cutter had to be sent by rail and at each centre *juar* cut from an area of about three acres was chaffed and put into a small pit. These demonstrations were largely attended and it was found that the material put into the pit produced excellent silage when the pit was opened in the following April. Two or three similar demonstrations were given in the following year and it was found that in each case the village cattle soon learned to eat the silage greedily. The chief objection raised by the villager was that he lost the grain and it was difficult to convince him that he was not a loser thereby as the grain was recovered as feed. On the other hand, it was admitted by everybody that the fodder produced was of excellent quality that cattle ate it readily and it was a great improvement on the usual dry grass or *karbi* stalks on which the cattle usually existed at that time of year.

It has been proved that a pit silo properly sited and provided with a *kutcha* roof of grass will keep silage in perfect condition through a rainy season and two hot weathers at least. An experiment is now being carried out at Telinkheri in which a grain *juar* was used. The grain was allowed to harden and heads were removed before the crop was cut. At the time of filling the fodder into the silo pit it was observed that although the bottom leaves of the plant were yellow the stalk still contained sufficient juice to render the production of silage fairly hopeful. These experiments will be carried out during the coming hot weather.

It is found that cattle fed on silage in the hot weather keep in much better condition and that milch cattle do not dry off so quickly and give more milk than others which receive the ordinary dry roughage. A series of feeding experiments have been arranged to test the value of silage as a feed as an economical proposition against the feeds usually available during the hot weather.

During 1925, the number of demonstrations in villages were increased to six. This increase was due to the purchase of a motor lorry which made the transport of the engine and fodder cutter from one point to another much easier. The period during which silage can be made from *juar* is limited to a period of about three weeks at the end of October.

Grass silage has also proved to be successful if proper care in siting pits is taken; on Government farms, however, *juar* has up to date been found to be the best fodder to use as it produces the greatest bulk and quality from a given area.

It has been found that an engine and fodder cutter costing about Rs. 1,000 is quite suitable for chaffing the *juar*. Chaffed *juar* packs tighter into the pits and reduces waste, the silage is also much more economically removed from the pit.

Tower silos are expensive to construct and fill, there is a greater percentage of waste than in a well-made pit silo. The following is a rough estimate of

the cost of producing silage from an acre of good *juar* yielding 8 tons per acre of green fodder or 3½ tons dry matter:—

Cultivation, manure and seed ... Rs. 20 per acre.

Harvesting and filling into pits ... Rs. 6 ,, ,,

The cost of digging the pit depends on the nature of the soil, but it is a work which can be carried out during a slack season of the year.

An average grass *bir* may be estimated to yield 1,000 lbs. of dry grass per acre which cut, carted and delivered in Nagpur is valued this year at 100 lbs. per rupee.

The cost of the dry matter in an 8 ton crop of silage works out at about 70 lbs. per rupee, if the green fodder is valued at 200 lbs. to the rupee.

The feeding value of the dry matter in silage is undoubtedly of a higher standard than that of the dead grass which is cut and called hay.

The system of ensilage would prove a valuable method of improving and increasing the fodder supply of these Provinces. It is of undoubted value to milch stock at a time when no other succulent fodder is available except in irrigated areas.

Silage made from grass would be much better fodder than the hay produced by leaving the grass to wither and die before cutting, moreover certain varieties of grass would be more palatable in the form of silage than in the form of hay.

Supplementary Note by Mr. F. J. PLYMEN, Director of Agriculture.

Silage.—1. It cannot be said that the practice of feeding silage has made much progress in this Province. The following reasons militate against its adoption:—

(*a*) Lack of conviction that it is a sound economic proposition. More work on this aspect of the question has still to be done.

(*b*) The poorer cultivator is not in a position to adopt it, the well-to-do man has not shown much willingness to do so.

(*c*) There is a certain amount of risk that a *juar* crop grown for the preparation of silage will prove to be too light owing to unsatisfactory climatic conditions. In such a case there is a natural tendency to harvest the crop as an ordinary grain crop.

2. It may be noted that at the Telinkheri Co-operative Dairy where the crop is grown and silage is prepared under the supervision of officers of the department, the *gaoli* members of the society are much in favour of using silage for their milch cattle in the hot weather.

Rai Bahadur TUNDI LAL POWAR, B.A., Deputy Director of Agriculture, Eastern Circle, Raipur.

Replies to the Questionnaire.

QUESTION 2.—AGRICULTURAL EDUCATION.—(i) The supply of teachers and institutions is not sufficient in my circle.

(ii) Chhattisgarh is the most backward division in an educationally backward Province. It therefore stands in the greatest need for extension of teaching facilities.

(iii) It is most desirable that teachers in village schools should be drawn from the agricultural classes. A teacher not belonging to these classes usually finds it very difficult to understand properly the home conditions, habits and psychology of children belonging to these classes.

(iv) There is no particular school imparting agricultural education in my circle. Two small schools were attached to farms at Labhandih and Chandkhuri, but they had to be closed for want of pupils. In the light of experience gained in these institutions, I am inclined to think that there is no demand for purely agricultural schools. On the other hand, I suggest that the existing vernacular schools in the rural areas may be utilised for agricultural education. Small plots may be attached to selected village schools and the text-books may contain a large number of subjects on farming. My information is that a large number of rural schools are poorly attended, which may be due to the fact that the present system of education given in these schools is not suited to the needs of the agricultural classes. If my proposals are accepted and if the instruction in the village school is given definitely on agricultural lines, the farmers will readily see the benefit of sending their boys to school. This will mean more correlation between the activities of the Education Department and the Agricultural Department.

(v) The prospect of getting Government service is the main incentive which induces boys to join agricultural classes.

(vi) No.

(viii) There are nature study plots attached to the two normal schools in the circle. The pupil teachers who study in normal schools are said to be taking interest in these plots. There are at present no school farms, but there are proposals to throw open the existing demonstration plots at Baloda Bazar and Champa for teaching agriculture to the pupils in the vernacular middle schools in these places in their spare hours.

(ix) Government service.

(x) At present, farming does not hold out as good prospects as can be secured by an intelligent youth in other walks of life and also the life of an agriculturist is hard. Therefore, in order to make agriculture attractive to middle-class youths agricultural qualifications should receive more consideration than at present in selecting candidates for the Revenue Department or in other departments where the officers have to deal with agriculturists.

(xi) Yes.

(xii) Adult education in rural tracts can be popularised by intensive propaganda and cinema.

(xiii) The administration should remain in the hands of the Education Department, but the supervising staff of the department should be partly recruited from the graduates of the Agricultural College.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) The following measures have been successful in influencing and improving the practice of agriculture :—

(1) *Seed and Demonstration farms.*—On these farms the advantages of improved methods of cultivation, improved seed and improved implements are demonstrated. A large number of agriculturists visit these farms and are well impressed with them.

(2) *Agricultural Associations.*—There are District Associations, Tahsil Associations, and Circle Associations. The members of these associations undertake to demonstrate on their own farms the improvements recommended by the department and thus help in popularising them. These demonstrations when properly conducted by private individuals go a long way in convincing people of the benefits to be derived from the improvements recommended.

(3) *Demonstration plots for definite purposes.*—Land for these plots is taken in selected centres on lease from cultivators for a period of five years. On the expiry of this period, another plot in a different centre is taken. These plots when managed successfully under conditions obtaining in villages have far-reaching influence on the cultivation in the neighbourhood.

(4) Agricultural shows and fairs.

R. B. TUNDI LAL POWAR.

(5) Smaller practical demonstrations carried on by the Agricultural Assistants from village to village.

(6) Distribution of pamphlets and bulletins describing in simple language the improvements recommended.

(7) Lantern lectures.

(*b*) A well organised intensive propaganda on the aforesaid lines with a view to impress on the cultivator the importance of agricultural improvement is very necessary. A cinema will be of great help for this purpose.

(*c*) Education and intensive propaganda among the agriculturists accompanied by practical demonstrations will induce cultivators to adopt expert advice more freely.

(*d*) The following may be mentioned as striking instances of the success of demonstration and propaganda work:—

(1) Introduction of seed of the improved varieties of paddy, wheat and sugarcane and the cultivation of ground-nut in the Eastern Circle.

(2) Introduction of the ridge and furrow method of planting cane and use of oil-cake as manure for the crop.

(3) Introduction of iron cane-crushing mills and improved furnace for boiling *gur*.

(4) Introduction of light iron ploughs and winnowing machines.

QUESTION 5.—FINANCE.—(*a*) Co-operative credit societies should finance cultivators for agricultural operations and enable them to hold up their stock for sale at the time when better prices can be obtained. The loans for agriculture, as far as possible, should be made in kind and when they are made in cash, care should be taken to see that they are utilised for the purpose for which they are intended. In the beginning adequate staff should be provided to educate the members of the societies in the principles of co-operation and self-help and to insist on punctual repayment. For cultivators heavily indebted but possessing sufficient security in the shape of landed property, long-term credit by institutions like land mortgage banks will be most desirable.

(*b*) *Taccavi* advances by Government should only supplement the loans by the credit societies. These should always be given in kind rather than in cash as is now being done for the purchase of seed, implements, manure, etc., through the Agricultural Department.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The main causes of borrowing are—

(1) Accumulated debts due to high interest.

(2) Absence of occupation in the slack season.

(3) Increase in family expenses on account of the general rise in the cost of living.

(4) Lack of thrift.

(5) Rise in agricultural wages and small and uncertain margin of profit.

(6) Lack of education and business capacity.

These are the general causes of indebtedness. There are some other causes which are peculiar to certain localities. For example, in Chhattisgarh the Marwaris, Brahmins, and Mahrattas are mostly malguzars. These classes being more brainy freely exploited the Chhattisgarhi agriculturist who like his brethren elsewhere is very conservative in habit and customs. Loans were taken without much thought of consequences, and land has gradually passed from the hands of the real tillers to absentee landlords who employ all sorts of tricks to squeeze out money from their tenants and thus rob them of the fruits of their toil. In many cases, a tenant has to begin the year with borrowed seed because his earnings of the previous year are hardly sufficient to meet his past habilities.

(ii) The sources of credit are—

(1) Local *bania* (moneylender and malguzar).

(2) Co-operative societies.

(3) Government loans.

(iii) The margin of his profit is so small that after meeting his agricultural and family expenses, he is left with little or nothing to repay his debts. For this his inability to manage his affairs economically and wisely and his ignorance are chiefly responsible.

(*b*) Special measures taken to deal with rural insolvency, to enforce the application of the Usurious Loans Act or to facilitate the redemption of mortgages will certainly afford considerable relief to him. But these will not go a long way in ameliorating his condition unless strenuous efforts for his education and improvement

of his calling are made at the same time. He must learn the principles of self-help and thrift.

(c) Non-terminable mortgages should be prohibited, but measures to restrict or control the credit of cultivators such as limiting the right of mortgage will not be in the interest of cultivators at this stage because they have to depend on loans and cannot stand on their own feet at present. These measures can be taken only when the co-operative societies are fully developed and the people are prepared to take full advantage of these.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—Owing to the evil effects of the now obsolete practice of *lakhabata*, the evil of fragmentation of holdings is more serious in this circle than elsewhere. As a result of this it is common to find in every village holdings of, say, 10 acres distributed all over the village area in about 80 little plots of land. This extra fragmentation of holdings is an obvious bar to the advancement of agriculture.

The consolidation of holdings has engaged the attention of cultivators as well as of the Local Government, and to effect this an officer of the rank of Extra-Assistant Commissioner has lately been put on special duty. This subject has been discussed at length by Mr. J. F. Dyer in his Note* on Consolidation of Holdings in Chhattisgarh.

QUESTION 10.—FERTILISERS.—(a) Under the conditions obtaining at present, greater use can profitably be made of the natural manures, though artificial manures can also be used with advantage for irrigated wheat, cotton and garden crops. Cattle-dung is the only manure easily available to a cultivator but a good deal of it is burnt as fuel and whatever remains is so badly preserved that it loses much of its manurial value. By preserving it carefully he can greatly increase the manurial value of the quantity he has. At the same time cattle urine, which is equally good as manure, is not made use of. By conserving it, he can greatly supplement his supply. Green manure of *sann* hemp has been found very useful for the rice and sugarcane crops, but on account of the prevailing system of broadcast sowing of paddy its application is not practicable. However, it is being used to some extent for transplanted paddy and sugarcane crops. The use of oil-cake is now freely made for sugarcane and garden crops. Another manure which has given satisfactory results for paddy is bonemeal, but caste prejudice stands in the way of its wide application. The best way of popularising a new and improved manure is to demonstrate its use on demonstration farms, demonstration plots and in cultivators' fields in selected centres under the supervision of the staff of the department and when the crops are ready, to invite cultivators in the neighbourhood to observe the difference between the manured and unmanured fields. This method has been found very useful in convincing a cultivator of the value of new manures.

(d) As a result of demonstration, oil-cake is now widely used as manure for sugarcane and garden crops in this circle.

(e) The effect of manuring with phosphate, nitrates and sulphate of ammonia is under investigation.

(f) The following methods may be tried to discourage the practice of using cattle-dung as fuel :—

(1) To demonstrate its value as a manure against that of cattle-dung ashes in cultivators' fields.

(2) To supply wood free of charge from Government forest wherever practicable.

QUESTION 11.—CROPS.—(a) (i) There is great scope for the improvement of the existing crops by selection and careful breeding. The improved strains of paddy so far evolved yield about 14 per cent more than the *deshi* seed. Both rich and poor cultivators can equally take advantage of these without any extra cost or change of technics; so the improved varieties of the existing crops can be introduced easily and made popular.

(ii) The introduction of new crops largely depends on local conditions, initial outlay, manure supply and labour. If these are favourable, it becomes easy As an example, the case of ground-nut in this circle may be mentioned. Some years back this crop was unknown here, but now it is grown in some thousand acres. Had it not been for the pig trouble, the area would have been much larger. This crop can be grown profitably on *bhata* (laterite) soil on which inferior millets are sown once in three or four years. There are extensive areas of this class of land which can be utilised for this paying crop.

(iii) Seed of the improved varieties of crops is being regularly distributed from Government farms, private seed farms and through village unions. These have so far served their purpose, but now in spite of the fact that the number of private seed farms and village unions is increasing every year, they are not able to meet the growing

Vide pages 152—160.

demand. Therefore it is desirable that co-operative societies should step in to take the purchase and supply of pure seed on a commercial basis.

(iv) Enormous damage to crop is caused by wild pigs. During recent years, they have appeared even in the open tracts and are multiplying with alarming rapidity. With a view to arrest their growth, pig-killing clubs have been organised in several places and a number of pigs are killed every year, but this number is very small when compared with the increase. Regular beats systematically arranged and extending over large areas haunted by the pest may help in exterminating them.

(*c*) Paddy is by far the most important crop in this circle, and satisfactory progress has been made in improving it by selection and breeding. The strains of the most promising varieties evolved by the department have found favour with the cultivator for heavy yield and quality and there is an increasing demand for pure seed of these. Wheat stands next in importance. Of the hundreds of varieties tried so far on the experimental farm, P 100 has been found the most promising one It has established its reputation for high yield and quality and is fast replacing the local wheat.

Ashy Mauritius, J 247 and *Khari*, the varieties of cane introduced by the department, are now seen growing in most of the villages where cane is planted.

Mention has already been made of ground-nut as a new crop introduced.

QUESTION 12.—CULTIVATION.—(1) The system of paddy cultivation as practised here is a primitive one. Seed at the rate of 100 to 120 lbs. per acre is sown broadcast and when the plants have grown about 9 inches high, the crop is cross-ploughed. With this method of cultivation, there is great waste of seed and much labour is required in weeding and removing *karga* (wild rice). The system of transplanting is decidedly more profitable than this, as there is much saving of seed and higher outturn of grain free from *karga* is obtained. Efforts were therefore made to introduce transplanting in place of broadcast sowing and in the course of 12 years the area of transplanted rice was increased from 20 to 41,824 acres. Beyond this it could not go. The main difficulties in the way were scattered holdings, general low pressure of population and low standard of living

QUESTION 14.—IMPLEMENTS.—(*a*) The existing agricultural implements are not very effective and economical in use and they can be replaced with advantage by better ones. These should be simple in construction, light in draught to suit local bullocks, cheap, durable and easy to handle. If the new implement possesses the aforesaid merits, it is welcomed by the cultivator. Cane-crushing mills, winnower, light iron ploughs and *gur* boiling furnace may be cited as instances. In this circle, there is no prospect in the near future for costly and complicated machinery.

(*b*) Practical demonstrations in cultivators' fields by the staff of the department or by any other agency duly qualified for the work will greatly hasten the adoption by the cultivator of improved implements.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) In villages where only *kharif* crops are grown, an average cultivator is busy on his holding from the middle of May to the end of December and where both *kharif* and *rabi* crops are grown, he is busy all the year round from the middle of May to March he is busy on his holding, and in April and the first half of May he attends to the improvement of *bunds* and levelling of fields, repairs of houses and other family and social affairs. Those who have got only one season crops utilise their spare time in the improvement of holdings if they can afford to do so, otherwise they go out in search of employment as labourers or cartmen.

(*b*) and (*g*) Any subsidiary industry which is closely connected with cultivation, such as fruit, vegetable and sugarcane growing will be taken up easily by the agriculturists if facilities for these are offered to them. These industries will enable them to make the best use of their leisure and at the same time provide employment to labourers and needy tenants in the slack season. Irrigation facilities and funds are required for their success. Government can help with these.

(*c*) The following are the chief obstacles in the way of expansion of such industries as bee-keeping, poultry rearing, sericulture, pisciculture, lac culture and rope and basket making :—

(1) Want of technical instruction.
(2) Lack of finance.
(3) Lack of arrangements for marketing.
(4) Caste prejudice.

(*d*) No.

(*e*) No, this will not be in the interest of agriculture. Such industries will create competition for labour and thereby cultivation will suffer.

(*f*) Yes.

R. B. TUNDI LAL POWAR.

QUESTION 18.—AGRICULTURAL LABOUR.—(*a*) Agricultural labour flows spontaneously from areas where there is surplus to areas where there is shortage. No efforts in this direction are needed.

(*b*) The shortage of labour is begun to be felt now even in this circle. Labourers are migrating every year in large numbers to industrial centres in, as well as outside, the Province where they get higher wages. This flow of labour can be checked by developing subsidiary industries which will provide work for them even in the slack season of agriculture and by raising the standard of cultivation whereby the cultivator will be able to make more profit and thus be in a position to pay higher wages to them.

(*c*) This is not applicable here.

QUESTION 20.—MARKETING.—(*a*) The existing marketing facilities in this circle cannot be regarded as satisfactory. The principal markets are at Rajnandgaon, Druge, Raipur, Bhatapara, Bilaspur, Akaltara, Champa, Raigarh, Kharsia and Pendra. They are 100 miles or over from the interior and therefore for want of communication facilities the cultivator finds it difficult to cart his produce to these. But after the opening of the Raipur-Vizianagram railway line which is under construction at present, many new markets will come into existence and greatly solve the difficulty.

(*b*) I am not satisfied with the present system of marketing and distribution Rice is the chief agricultural product of this circle. A cultivator is the actual producer, and between him and the consumer there are the village *bania*, *kochias* (petty traders), traders and big firms. The village *bania* or the malguzar advances grain and money for the agricultural operations in the months of June and July and recovers at the time of harvest grain with 25 to 50 per cent interest and also takes it in lieu of money at a cheap rate. After reserving enough for his next year's use, he sells the surplus in one of the nearest principal markets. His margin of profit ranges from 16 to 20 per cent. *Kochia* is a petty trader who moves from village to village and purchases in small lots on cash payment and then takes the quantity to the principal markets for sale. He works on a margin of 8 to 10 per cent profit.

The local trader buys from cultivators who bring their produce to him in cart loads. He is in touch with the rates prevailing in the principal markets and buys 5 to 6 per cent cheaper, and pays in cash. He is very unscrupulous in using false measures and making short payments. The traders who have permanently settled down at the principal markets purchase through *dalals* who charge from 12 annas to Re. 1 per cent as commission. The traders work as commission agents to big firms and consign direct. They operate on 2 to 3 per cent profit.

These traders are financed by banks or big bankers at 12 annas per cent interest. The purchased goods are stored in their (bankers') godowns.

(*c*) The marketing facilities may be improved on the lines given below. Co-operative purchase and sale societies may be organised:—

(i) Facilities for transport are very necessary and therefore district councils should arrange for more roads specially in the remote parts of the districts.

(ii) In each of the bigger markets there should be a managing committee of which two-thirds of the members should be agriculturists to safeguard the interests of sellers. The committee should arrange for the sale of goods by open bidding with due regard to quality and purity and should see that correct measures are used and prompt payments made. The committee can charge about four annas per cart load from the sellers as fee to meet their expenses. It is very important that the committee should have up-to-date information regarding prices ruling in other markets and for this a journal giving all the required information should be supplied to them. The system of sale by weight has much in its favour against sales by measures wherein a considerable loss to the seller is caused by wrong handling of the measure.

(*d*) More effective steps might be taken to place at the disposal of cultivators, merchants and traders information as to market conditions, crop returns, complaints as to Indian produce from wheresoever originating and agricultural and market news in general. This information may be issued in the form of bulletins written in easy and popular language which may be distributed widely through *patwaris* and schoolmasters.

Oral Evidence.

28315. *The Chairman:* Rai Bahadur Tundi Lal Powar, you are Deputy Director of Agriculture, Eastern Circle, Raipur, Central Provinces?—Yes.

28316. You have provided the Commission with a note of the evidence which you wish to give. Do you desire at this stage to make any statement or shall I ask you a few questions?—You may ask me a few questions.

R. B. TUNDI LAL POWAR.

28317. Would you kindly give the Commission a short account of your technical training ?—I was first trained on the Nagpur farm and then I was put in chage of the Telinkheri farm. After that I was transferred in 1903 as Superintendent of the experimental farm here. I worked there for 8 or 9 years and then I was appointed as Extra-Assistant Director of Agriculture. I officiated as Deputy Director for three years from 1917 to 1920 and now again I have been officiating as such from 1923.

28318. Had you been a farmer before you commenced your education ?—Yes.

28319. Are you sprung from the cultivating class ?—Yes.

28320. I think you have probably heard most of the evidence which Mr. Plymen has given, have you ?—Yes.

28321. If there are any outstanding points on which you differ from him I hope you will tell the Commission ?—I do not differ; I quite agree with his views.

28322. What do you say on this question of the balance between the expense of demonstration and propaganda and that upon research proper? Do you feel that enough is being done in the direction of spreading the information already acquired by the research workers ?—No, we are not doing enough because we are short of hands and the number of Assistants and other staff we have got is not enough.

28523. I suppose what you would like to see would be no reduction in research and more money spent on demonstration and propaganda ?—Yes.

28524. Would you be prepared to see some reduction of research if the money could be spent on demonstration and propaganda ?—No.

28325 You would rather go steadily forward until the budget can be increased all round ?—Yes.

28326. Do you regard demonstration on the cultivator's own plot as the ideal method ?—Yes; but I think that should be done under the supervision of the agricultural officers

28327. Is there any system in vogue in the Province according to which a cultivator is encouraged to make an experiment and, provided he follows the advice of the representative of the Agricultural Department, is guaranteed against loss ?—No; that system we have not adopted and we do not advise cultivators to make experiments. We make experiments on our experimental farms and only those methods which are found profitable by us are recommended.

28328. In your experience, is it better to attempt to demonstrate one feature at a time or do you think the cultivator is capable of going to a demonstration plot and deriving benefit from a series of experiments ?—We have different classes of cultivators here who could take advantage of demonstrations and so we proceed with all the work we have got in hand.

28329. You do not think that, where you have a thing of outstanding value to advertise, what I may call a single purpose demonstration is sometimes more effective ?—In certain cases it is more effective

28330. I have very few questions to ask you at this stage because, having just examined the Director very completely, I shall only be repeating myself, particularly since you told us that in the main you agree with him. I should, however, like to ask you a question or two about fragmentation. Are you familiar with fragmentation of holdings ?—Yes.

28331 Are you familiar with the district in this Province where fragmentation is a serious problem ?—Yes.

28332. You probably have read a note provided for the Commission on this question of fragmentation ?—Yes.

28333. Are you hopeful that by working on those lines something may be done to mitigate this evil ?—Yes. We have not tried that system sufficiently, but I think if we proceed on the lines suggested by Mr. Dyer it is hopeful.

28334 But I observe that co-operation plays no part in the scheme ?—No. I do not expect anything from the co-operative movement in this respect.

28335. You do not expect co-operation to achieve anything in the direction of consolidation of fragmented holdings ?—No, because conditions here are quite different from those in other Provinces.

28336. In the Punjab, for instance ?—Yes.

28337. What do you say are the outstanding differences?—Here in one village we have got different situations and different classes of soils, we have got very small fields and if we proceed on the lines they have adopted in the Punjab, I do not think we will succeed.

28338. You could not satisfy the individual cultivator?—No.

28339. He has got various plots on different qualities of land and whatever you do for him he will feel he would be worse off than what he was before; is that the position?—Yes.

28340 *Sir S. M. Chitnavis*: You have got maps prepared showing the difference between the two places?—Yes.

28341. *The Chairman*: Upon this question of agricultural education, do you agree from your own experience that there is any sign of a growing demand for general education on the part of the cultivator for his boy?—It is very slight.

28342. But you think there is some movement?—Yes, there is.

That is precisely the impression that I have formed after listening to very many witnesses.

28343. Has there been in this Province an increase in the number of agricultural labourers and a comparative decrease in the number of persons holding land lately?—I think that movement is in progress because some cultivators who are heavily indebted have given up their lands and in this way a good deal of land has changed hands.

28344. That tends to bring various classes of land together under one name in the revenue records, does it?—No; what I mean is that, supposing a cultivator has got only a few acres and he is very heavily indebted, then the land passes to a well-to-do man and the owner takes to labour

28345. My point is that the land passes to the man who is already holding land and the former owner works it as a tenant?—Not necessarily.

28346 But the shortage of agricultural labour remains as acute as it ever has been, is that so?—Yes, I think it is even increasing.

28347. Now there is a good deal of railway construction going on in this Province at this moment and there has been a good deal of development, probably within your recollection?—Yes

28348. Now, looking at this question of improved communications and its bearing upon the marketing, do you think that cultivators in districts where communications have improved have tended on the whole to get a better return for their crops than they did before?—Yes.

28349. You feel pretty confident in your mind from definite cases that that is so?—Yes.

28350 You use the words: "I am not satisfied with the present system of marketing and distribution". Now leaving aside this question of the cotton markets in Berar, which the Commission will consider when they see the forthcoming report, what suggestions have you for improving the marketing?—I think the first difficulty is about communications. Now we have got the principal markets situated on the railway lines. The cultivators have to bring their produce from long distances to those markets, sometimes from 80 or 100 miles. In most cases there are no good roads and for want of good roads they cannot bring the produce to the principal markets and so they have to sell it to *banias* and other local traders who do not pay proper prices and who are very unscrupulous in making payments.

28351. I want to ask you one or two questions about crops. Do you feel that the dry crops in this Province do receive a fair amount of attention by this department as compared with the irrigated crops?—Yes; they do.

28352. Let me first ask you, are the pulses important crops?—Yes; we have not done much with regard to pulses.

28353. Would that be a very important line of work?—These pulse crops are not very important, in this circle at least.

28354. What about *juari*?—It is not grown. On account of too heavy rainfall it is not possible to grow *juari*.

28355. *Sir Henry Lawrence*: Are you speaking only of this circle?—Only of this circle.

28356. *The Chairman*: What you said before is also to be interpreted in the same way?—Yes, I am only speaking of this circle.

28357. *Sir Henry Lawrence*: Have you no experience of the western part of the Central Provinces?—No, I have spent almost the whole of my service in this Division.

28358 And the whole of your evidence is restricted to this portion of the Central Provinces?—Yes.

28359. You say there is a shortage of labour; is that a shortage of labour only at certain periods of the agricultural season?—Yes.

28360. In other parts of the season there is sufficient occupation?—Yes, when the labouring classes cannot find sufficient work in connection with agriculture, they go to other works where they can find employment, for example, irrigation, Public Works Department, railways. A good many labourers emigrate to them.

28361. By means of that system of emigration there is sufficient employment throughout the year for anybody who chooses to take it?—No, I do not think so.

28362. For how many days of the year does a man who wishes to work have to sit idle because he can find no work?—That depends on the means of the man; supposing he is a cultivator and has got the means to engage all his time in cultivation, he can find work for himself for the whole year round. There are certain villages where they have only got *kharif* crops, in these villages an ordinary cultivator is busy on his holding from the middle of May to the end of January, where they have got both *kharif* and *rabi*, the cultivator is busy on his holding from the middle of May to the middle of March, and then after that period he is busy in improving his field *bunds*, levelling his fields, and so on. What I mean is that if a cultivator can afford to employ his time on his holding, he has got sufficient work, but in cases where they are too poor to employ their time on their holdings, they take to labour with other people or emigrate.

28363. And they can find that employment?—Yes, they can either find it locally or they go outside.

28364. That refers to the cultivating class?—Yes.

28365. Below that there is a landless class?—Yes

28366. Do they find labour all the year round?—They find employment, there is no difficulty in that

28367. In your answer to Question 6 (*a*) (i) you have given as the second main cause of borrowing the absence of occupation in the slack season?—Yes.

28368. How do you explain that, having regard to your last answer?—They are short of means, unless they have something or borrow, they cannot employ their time for their cultivation on their holdings, and so when they are short of funds they go and seek employment elsewhere

28369. What percentage of the people do you suppose are unable to find employment throughout the year?—Do you mean the labouring class or cultivators?

28370. Whether labouring class or cultivating class, take it as you please?—I do not think I should be able to give you the exact figures.

28371. I want your own surmise as the result of your experience?—I think about 25 per cent.

28372. 25 per cent are unable to find employment all the year round?—Yes.

28373 For how many days in the year is that 25 per cent sitting idle?—I think from January to May.

28374. Four months?—Yes, 4 months in the year.

28375. Have you seen this memorandum* which has been supplied to us?—Yes, I have seen it.

28376. It is stated here that legal difficulties regarding the transfer of rights in the exchange of holdings are a considerable hindrance. When men wish to exchange their holdings and consolidate their area, there are certain legal difficulties?—Yes.

28377. Can you tell me what those legal difficulties are?—Supposing there are two cultivators who want to exchange their plots with each other, but the first cultivator has absolute occupancy right while the other is an ordinary tenant; when those plots are exchanged, the rights appertaining to those plots, cannot be exchanged; that is the chief difficulty.

28378. Difficulties of tenure?—Yes.

28379. Is that a serious complication?—That is the serious complication.

---

* See pages 152-160.

28380. Are not the majority of villagers in a particular village holding on the same kind of tenure ?—No, there are so many different tenures.

28381. In the same village ?—Yes.

28382. We are told that since 1905, 500,000 acres which were under minor millets are now put under rice or other more valuable staples ?—Yes.

28383. Has that been in any way due to the work of the Agricultural Department? —I think to some extent.

28,84. It is an economic process ?—Yes, it is due to the work of the Agricultural Department and to some extent to the work of the Irrigation Department as well.

28;85. I understand the area irrigated in the Province is 11 lakhs ; what proportion of that 11 lakhs has been the subject of this improvement of crops ?—It would be more than one per cent I think.

28386. 1 per cent of the 11 lakhs ?— Now there is a tendency amongst cultivators to bring these inferior classes of soil under rice, before irrigation, these classes of soil were used for inferior crops but now as they have got irrigation, they are turning that land into rice land.

28387. Then are you hopeful that the cultivator, if he sees an improvement in cropping open to him, is ready to seize the opportunity ?—Yes, but the progress is very slow, I should say in this circle because the people are very backward and they are very conservative

28388. *Sir Thomas Middleton* : You point out that the schools are very poorly attended in this division ?—Yes.

28389. And you suggest that they should be used for teaching agriculture ?—Yes.

28390. Your method would be to attach plots of land to the schools and to introduce some agriculture into the text-books? —Yes.

28391. If the schools are poorly attended, how many of the boys in an ordinary village school would learn to read an agricultural lesson?—I think most of the boys, because in villages the boys who come to school are sons of cultivators or of other people who are closely connected with agriculture.

28392. Put in an ordinary school how many children would there be : 30 or 40 boys ?—About 40.

28393. Of those, how many would be in the first class, the infants' class. would it be over 30 ?—About 10.

28394 Then your district must be different from other districts in India ?—Yes, but I am speaking about this circle.

28395. Do you think the boys stay on for four classes ?—By the time they reach the fourth class the number falls considerably.

28396 To what ?—They do not stay in the school till they pass the primary class.

28397. But in a school in which there are 40 children, how many would be in the first class ?—In the first class, the infant class, there will be about ten.

28398. Then there must be a greater number in the second class than in the third class ?—In the second class the number will be the same, but by the time they reach the fourth class the number falls.

28399. By the time they have finished the fourth class you mean ?—Yes.

28400. That is not the information we have had elsewhere ?—No, but the conditions here are different.

28401. So that you think you would have 10 or 15 boys in an ordinary school to whom you could teach some agriculture through the text-book ?—Yes, in the third and fourth classes we can teach it, but not in the first and second classes.

28402. Have you got any vernacular readers which have got agricultural lessons in them ?—I do not think we have got any.

28403. In order to make agriculture more attractive to middle class youths, you think that agricultural qualifications should receive more consideration than now when selecting candidates for the Revenue Department. You have yourself taken a B. A. ?—Yes.

28404. So that you know the general quality of the B. A. students?—Yes.

28405. And in your opinion the revenue authorities would find as useful recruits among those who have been through the Nagpur Agricultural College as among the ordinary B. A's; is that your opinion?—I think so, yes.

Well, I hope the revenue authorities will listen to your view.

28406. Have light iron ploughs been introduced into this Chhattisgarh Division?—I think we have sold so far 300 or 400 ploughs.

28407. Of what type?—Mostly Meston and Jat. The Jat is just like the Monsoon plough.

28408. *Prof. Gangulee*: Where are these ploughs manufactured?—We get them from England; they are not procured in India. We tried some ploughs manufactured in India by Burn and Company, but the material was inferior and they did not give satisfaction.

28409. *Sir Thomas Middleton*: I have seen round the Chhattisgarh Division large droves of cattle. To whom do these droves belong?—To the cultivators.

28410. Have they been entrusted to herdsmen to keep for the winter months?—The whole village has got one or two graziers and he is in charge of the herd. He takes milk and is paid in kind.

28411. Are these cattle that we see round Raipur a fair sample of the cattle of the Chhattisgarh Division?—I think they are. As a rule, the cattle here are the worst we have got in the Province.

28412. I have read in evidence submitted to us that in the month of January the cattle are at their best in this Division?—They are in their worst condition in July.

28413. They are now at their best?—They are at their best in December and January, when there is some grazing to be had.

28414. *Sir James MacKenna*: How long have you been working on wheat?—Since 1915.

28415. What is the best wheat in your circle?—Pusa 100.

28416. In what way?—In yield and in quality.

28417. How does it compare with other wheats in this Division?—It gives 10 per cent more than the local variety.

28418. Does it command a premium in the market for quality?—Yes.

28419. Who introduced it in the division?—We got the seed originally from Pusa and compared it with other varieties, local and foreign, and found it to be the best.

28420. Did Mr. Howard pay you a visit in connection with its introduction?—Yes.

28421. *Prof. Gangulee*: Is there great scope for the introduction of subsidiary occupations in your circle?—Any occupation closely connected with agriculture, such as fruit and vegetable cultivation and garden crops, has some prospects.

28422. What facilities would be required for their introduction?—Irrigation facilities and financial help.

28423. Is the co-operative movement strong in your circle?—No.

28424. It does not help in the matter of subsidiary occupations?—No.

28425. Do labourers who migrate come back to your circle in any numbers?—Only a small proportion of them.

28426. After they come back do they take up agriculture?—If they have the money; otherwise they become labourers.

28427. Do you know any labourers who have come back?—Yes.

28428. How does their standard of living compare with that of those who have not migrated?—There is some change. They are better clothed and their mode of living has improved.

28429. How long have you known this circle?—For the last twenty-three years.

28430. Have you found any decided change in methods of cultivation during that time?—Yes The people have taken to new crops, such as ground-nut and improved varieties of sugarcane. They are now using improved varieties of paddy and wheat and there has been a decided improvement in field embankments and so on.

R. B. TUNDI LAL POWAR.

28431. Is indebtedness increasing?—I think it is.

28432. What about the standard of living?—It is improving, but not rapidly.

28433. *Mr. Kamat*: How many demonstration plots have you in your own circle?—Three; we are opening four more this year.

28434. So the Deputy Director has only four plots to look after?—He has other work as well. He is directly in charge of the experimental farm and supervises the subordinate staff.

28435. How many *kamdars* have you to look after these four demonstration plots?—One for each plot.

28436. Do you think you are understaffed?—Yes, because we want more demonstration plots and for each we require at least one man. Unless we have one demonstration plot for each Revenue Inspector's circle, we will not have much influence on the cultivation of the district.

28437. Have you any experience in regard to consolidation?—Very little.

28438. *Sir S. M. Chitnavis*: Can you tell us something about the methods of the Irrigation Department here and whether it is popular with the cultivators?—The best person to tell you that would be someone connected with the Irrigation Department. People sometimes complain about the rates, but there is not much there to complain about. They also complain of the small supply of irrigation water.

28439. Some years back certain fodder reserves were started in this division. Are they still going on?—We have transferred four fodder reserves to private individuals on easy terms, and they have started cattle-breeding under the instruction of the Agricultural Department.

28440. How many reserves have you altogether?—We had eleven in all, four of which have been leased to private individuals and five are in our charge. The rest are still under the District Council.

28441. *The Chairman*: Do you think there is room for some extension of minor irrigation schemes in the district with which you are familiar?—Yes.

28442. Do you think there are schemes which the cultivator might carry out at his own expense and risk if he had expert advice? Yes, but most of the people are too poor to undertake them.

28443. Could they be undertaken as co-operative schemes?—Not for some years to come.

28444. That stage has not been reached?—No.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Tuesday, the 18th January, 1927.

Tuesday, January 18th, 1927.

RAIPUR.

PRESENT :

The MARQUESS of LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.
Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
Raja SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO of PARLAKIMEDI.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.
Mr. C. U. WILLS, I.C.S.
Sir SHANKAR MADHO CHITNAVIS, Kt., I.S.O. } (*Co-opted Members*).
Mr. J. A. MADAN, I.C.S.
Mr. F W. H. SMITH. } (*Joint Secretaries*).

Mr. RAMCHARAN LAL DUBEY, Waraseoni, Balaghat District.

Replies to the Questionnaire.

QUESTION 2.—AGRICULTURAL EDUCATION.—(i) and (ii) There is one Agricultural College at Nagpur and two vernacular agricultural middle schools were opened, one at Hoshangabad and the other in the Raipur district. The latter has been closed. I have no information how the Hoshangabad school is working. The supply of teachers for the above two institutions is sufficient. As regards the question whether there are sufficient institutions or not, it will be admitted on all hands that there should be many more institutions for teaching agriculture, but I think it is yet to be ascertained of what type the agricultural school should be.

(iii) It should not matter whether the teacher belongs to the agricultural or non-agricultural class so long as he imparts practical training also.

(iv) Men turned out from the Nagpur Agricultural College take up service in the Agricultural Department. Considering this the attendance at the College is good enough. It is a plain fact that it will not pay a small or even an average farmer to undergo such a long and costly course of training as his farm will not offer adequate prospects for his qualifications. Owners of big farms will be well advised to take the college course, but the tendency of such men, if they go for collegiate education is to go to arts and law colleges and to take up services in other Government departments or do some other profession, as agricultural work is disagreeable to them and they also think that it will not pay well.

(v) and (vi) Students in the Agricultural College are mostly non-agricultural class men. They go there for qualifying themselves for service. If agricultural service is not available, they seek some other department and would go to agriculture as a last resource.

(vii) The two present courses at the college are all right, but men who want to do private farming, should have more practical experience of the cultivation of profitable crops suitable for the tract where they want to work and for this purpose the student after passing out from the college should be given thorough practical training on a Government farm for at least two years. The particular branch in which he is to be trained should be placed in his sole charge and he should also maintain its account to convince him more about the profits.

(viii) (*b*) School plots will be useful additions to the existing primary schools in rural areas, in which vegetables and flowers should be grown and all work done by the teachers and pupils themselves.

(*c*) School farms will not bring the desired result in primary schools as the boys in these schools are too young. As adjuncts to the existing English middle and high schools, I do not think they can be of any good. The students

in these schools are mostly non-agricultural class men, whom it will be futile to expect to change their social customs and take up farming as a profession for the family.

(ix) Almost all the students from this Province who passed out from the Nagpur Agricultural College have taken up service in the Agricultural Department.

(x) The present agriculture entails much hard and rough work and a man is more comfortable in other professions. It is also not remunerative. Means of substantially increasing the outturns and labour-saving devices will attract educated men to do agriculture.

(xii) and (xiii) Education in vernacular should be aimed at. Every village should eventually have a school and a library. The teacher should lecture the adults in their spare time until all the villagers learn reading and writing and get fond of reading. Boys of school-going age should be taught in periods suitable to them. Even an evening class might be held so that boys may be able to work for their parents as well as read. The teacher should be a trained man in agriculture. So agricultural training should be introduced into the normal schools, where vernacular teachers are trained. In every district, there should be a vernacular middle and normal school combined and it should have a farm attached to it. In addition to the present teacher's course, agriculture should also be taught. All vernacular teachers should be recruited from such schools as well as agricultural *jamadars* and *kamdars*. *Patwaris* may also be recruited from these schools. The tendency of the people is to take such courses of training, which guarantee a service. So such an institution will attract men and as the jobs to be offered, *viz.*, of vernacular teachers, agricultural *jamadars* and *kamdars* and *patwaris* are low paid ones, men will surely be fit to earn more in agriculture and will be attracted towards it. The cost of such institutions will not be so high that funds for them will not be found.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) Opening of Government farms and demonstration plots, agricultural shows held on farms and in fairs, field demonstrations and forming of Tahsil Agricultural Associations are the measures, which have influenced the improvement of the practice of cultivators.

(*b*) To increase the effectiveness of field demonstrations, help of the malguzar or a leading and most influential cultivator in the village should be secured. I think such men will be drawn to the side of the Agricultural Department if they be paid for the trouble they will take. They may be made members of the Tahsil Agricultural Association and paid travelling allowance for attending the association meeting as well as for the time they will spend with the agricultural officer, while he is on tour in the member's circle. To begin with there may be one member from each *patwari* circle.

It is also necessary to increase the number of Government farms. There should be one experimental farm in each district, a demonstration farm in each tahsil and two or three demonstration plots in each Revenue Inspector's circle. Apart from this, it seems desirable that some tangible help should be given to enterprising men, having agricultural qualifications, who are desirous of doing farming on improved lines. This should be in the form of a subsidy from Government as the activities of such men are greatly handicapped for want of funds. Improved farming by such men will go a long way in removing the apathy and convincing the cultivators of the advantages of improved farming. The money thus spent would, therefore, be more than recouped.

Men of ripe experience in the different grades of the Agricultural Department, desirous of carrying on private farming may be allowed to retire on proportionate pension. They may also be helped as suggested above by the grant of subsidy or loan on easy terms in starting their private farms. In my opinion, this will be a better step than encouraging fresh men from colleges to do private farming, as these men will be liable to commit mistakes through inexperience.

(*c*) Members of the Tahsil Agricultural Association should meet on a farm instead of in the tahsil court and at such times that they can be best impressed about the crops and the improvements made. As suggested in a preceding paragraph, if payment of travelling allowance is introduced, the attendance in the meetings will improve. The aim of the Agricultural Department should be to introduce improvements on the farms of the association members first and from there they will spread most quickly in the whole village. To provide for the expenditure to be incurred in the payment of travelling allowances to members, a small cess of about half an anna per rupee in the land revenue may be levied.

(*d*) As a result of the efforts of the staff of the Agricultural Department, *bhondu* and *luchai* varieties of improved paddy which are at least 10 per cent better than the local varieties have been introduced in areas visited by them. In this district about 1,800 M. S. N. ploughs have been supplied by the Agricultural Department within the last three years. The M. S. N. plough is better for rice cultivation in light soils than the wooden plough. In place of the local *mangi* and *kathai* varieties of sugarcane, the better yielding *khari* variety has been introduced and this variety is now being replaced by the improved Coimbatore cane varieties. The *Jat* plough has begun to be used for sugarcane cultivation. The Nahan cane-crushing mill which gives 20 per cent more extraction than the local wooden mill is now to be seen everywhere. The improved *gur* boiling furnace, owing to its easy feeding offers relief to the much troubled *gur* boiler. Other minor improvements affected through the activities of the Agricultural Department are too many to be mentioned. Efforts are being made by this department for introducing the use of oil-cake and fertilisers, *viz.*, nitrate of soda and sulphate of ammonia as manures for sugarcane. It is noticeable that progress is much handicapped owing to paucity of staff of the Agricultural Department.

In the matter of animal husbandry, stud bulls reared at Government cattle-breeding farms are so much in demand that it is difficult to supply the required number of bulls unless many more bulls are turned out from the Government cattle-breeding farms.

QUESTION 4.—ADMINISTRATION.—(*c*) (i) The Agricultural Department is trying its best to improve the practice of the cultivators by carrying on research work on experimental farms and in laboratories and introducing the improvements through the medium of the demonstration staff. The demonstration staff is confronted with the difficulty that leading cultivators do not help in the work as much as they can and this difficulty will be solved by drawing them to the side of the Agricultural Department by paying them allowances to come to meetings and to go out with the agricultural officers.

The services rendered by the Agricultural Department considering the small staff available may be looked upon as fairly satisfactory. It is, however, necessary to have a much greater expansion of the department for the real benefit of the country. As the superior services are to be Indianised, it would be desirable to send suitable men for training to more advanced countries.

The other cadres of the department should also be greatly expanded, the aim being to ultimately have an Extra-Assistant Director for each district, an Upper Subordinate for each tahsil and a Lower Subordinate, assisted by two or three *jamadars* in each Revenue Inspector's circle.

The subordinate staff had better be better paid than at present, especially in respect of travelling allowances, which are too meagre at present even as compared with those of any other Government department. The duties of a demonstrator entail much hard and rough work and a most irregular life. Increase in allowances will enable him to keep himself well equipped.

The veterinary staff should mix with the cultivators more than they do at present and, I think, try to train people in using simple medicines as well as in preparing locally available medicines.

QUESTION 5.—FINANCE.—(*a*) Loans should be given to the cultivators on a much greater scale than at present. They will fall under one of the following heads:—(1) for seed; (2) for carrying on the seasonal operation; (3) for manure; (4) for implements; (5) for bullocks; and (6) for making improvements.

Loans under (1), (2) and (3) will be short-term loans. In order that the cultivator may not handle money, seed, manure and implements will all have to be supplied through the Agricultural Department as at present but on a much greater scale. Seed can be supplied from Government farms and seed farms. For the supply of manure and implements, the supplying firms may open credit accounts with the Agricultural Department and payment made to the firms on recovery of the amount from the cultivators. Loans in cash will be in the case of items (2), (5) and (6), and officer recommending the loan should see that the amount is rightly spent by the cultivator. I think Government should take this question in their own hands. A bank should be opened and loans given on the recommendation of the Agricultural Department.

(*b*) The *taccavi* rules should be relaxed on the following points:—

The present procedure is a lengthy one and much time is taken from the time of applying till money is paid to the applicant.

The respectable cultivators would not like to give so much publicity to the matter as is at present the case.

The cultivator wants to keep a sort of continuous account with his creditor.

When *taccavi* falls due, but the cultivator fails to pay, the cause should be ascertained and a reasonable time allowed before taking coercive measures for recovery.

Existing rate of interest should be lowered, if possible.

Granting of *taccavi* loans on the recommendation of the Agricultural Department for seed, manure and implements is working better as the cultivator does not handle cash. The system ought to be greatly expanded and loans for all agricultural purposes should be given on similar lines.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The main cause of borrowing is the cultivator's accumulated debt. Occasional high expense in social customs also compels him to borrow at times.

(ii) The main source of credit is the moneylender

(iii) Causes preventing repayment are high rate of interest, seasonal reverses, sometimes calamities like cattle diseases, etc.

(*b*) I think cultivators should not have to do anything with the moneylender any longer. The present debts should be settled by appointing special officers for the purpose and easy instalments fixed for repayment. Hopeless cases may be declared insolvent. A bank should be started forthwith for advancing money to cultivators.

(*c*) From the past experience as lands have passed from cultivators' hands to moneylenders', the right of mortgage and sale should be limited. There should also be nothing like a non-terminable mortgage.

Consideration should, however, be given to the fact that exploiters always expect that the land should have a saleable right, and I think absence of such rights also keeps back men qualified in improved agriculture from starting agricultural concerns.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) It is highly desirable that the size of holding for rice should not be less than 4 acres So sub-divisions beyond this limit should be prohibited.

(*b*) Consolidation will be a most valuable move In the Balaghat district, the fields of a cultivator are not so scattered as in Chhattisgarh There are blocks but a man has more than one block in many cases and in such cases consolidation might be possible by arbitration. If not, legislation may be introduced.

QUESTION 8.—IRRIGATION.—(*a*) There are big irrigation works in this district belonging to Government as well as many private tanks and wells Wells can be improved considerably. Well irrigation is done in light soils on river banks, where subterranean water-supply is ample but the wells are *kutcha* and in most cases are dug annually. The lift used is the leather *mote*. In place of this outfit, there should be *pucca* wells, which will be most easily sunk. At present, people do not know well sinking and this work had better be taken in hand by the Engineering Section of the Agricultural Department. Power lifts and pumps and Persian wheels may be introduced in place of the leather *mote* By making the wells *pucca* and fitting up improved lifts thereon, the wells will not have to be so many, irrigation will be cheaper and will extend considerably.

The irrigation works belonging to Government are the Wainganga Canal, the Pathree Tank, the Sarathee reservoir and many other minor ones Most of these works can irrigate the rice crop all right but the supply of water available in the first three major works is not made full use of. The Irrigation Department is not popular enough. No efforts have been made to find out the cause of unpopularity and to find out how best the water can be utilised. Under the Wainganga Canal, remunerative crops like chillies and turmeric could be grown and under the Pathree Tank, there is much scope for the extension of sugarcane cultivation.

As regards irrigation from wells, people have no idea that their wells and lifts can be improved.

(*b*) At present, only rice is irrigated If rainfall is well distributed, little or no irrigation is necessary as was the case in the last season. Otherwise, when there are long breaks in the rains irrigation is done. But such periods are not peaceful. People at the tail end and at distances from the channel do not

generally get water and are dissatisfied. There are at times serious disputes among the cultivators for this reason.

In rice irrigation, no method of conserving water or preventing it from absorbing in the soil is feasible except by making the *bunds* intact and big enough. *Bunds* in this district are good enough. In the matter of sugarcane irrigation, a start in this direction has been made by intercultivating the crop by means of the Planet Junior hoe.

The openings in the irrigation channel require much improvement. Even at the head sometimes the supply of water is unreliable as anybody can silently put an obstruction in the open mouthed opening. I know of openings which have become permanently useless for this reason.

The rules of the agreement system for rice irrigation should be relaxed in cases in which irrigation water has not reached owing to the absence of a water course or short supply of water but where such areas are nevertheless fully assessed, steps should be taken to get water-courses made by the cultivators and in cases where too much work is to be done, which it will not pay a cultivator to do or is unmanageable by him, the Irrigation Department should do it or at least help in the construction. There is dissatisfaction in assessing cultivator's old wet areas and such cases should be reconsidered.

In the introduction of new crops under irrigation works, a stable policy is not defined but crops are introduced entailing much expense to the cultivator and then stopped.

QUESTION 10.—FERTILISERS -(*a*) Cowdung is mostly used as fuel. This could be remedied by planting trees for fuel Bones will be most profitably utilised if they are crushed and used as manure instead of being exported.

(*b*) Fertilisers are used only to a small scale for manuring sugarcane. To prevent adulteration they should be supplied from depôts on Government farms after being analysed. At present, business in fertilisers has not so much increased that farm depôts will not be able to manage it

(*c*) If the fertilisers could be made cheap enough so that it will pay to use them, they will be used more than at present.

(*e*) I think the manures have been tested on Government farms and the conclusion drawn is that with the present prices it does not pay to use them except for profitable crops like sugarcane, potatoes, etc.

(*f*) Trees for fuel should be planted. In my opinion, plantations of *karanja* trees should be started by the cultivator himself in small areas. Out of every five or six acres, an acre should be planted with *karanja* trees, which when big enough will give sufficient manure for the remaining area as well as the requisite fuel. This should work well in wheat tracts also as the leaves and twigs of *karanja* will be available for ploughing in just in the beginning of rains. In wheat lands, it is not possible to plough in *sann* early enough and so it does not rot but *karanja* leaves as stated above will be available for ploughing in the beginning of the rainy season. I understand in the Madras Presidency manuring with *karanja* leaves and twigs is practised.

I am of opinion that the outturn of rice will increase considerably by manuring with *karanja* leaves and cattle-dung which will be saved by the supply of *karanja* wood for fuel. In highly manured land, rice yields as much as 3,000 lbs. of grain per acre but the cultivator's outturn is only 1,000 or 1,200 lbs. per acre on an average in his unmanured land and may still go lower if no manuring will be done.

QUESTION 11—CROPS—(*a*) (i) Wheat, rice and cotton crops have been improved considerably by selection and crossing carried on on Government farms and this work had better be done on a bigger scale and at more places than at present.

(ii) Fodder crops are at present grown on some of the Government farms. It will be better if on all Government experimental and demonstration farms trials were made to find out fodder crops suitable for the different soil and climatic conditions which cultivators can take up. The cultivation of clover should be encouraged by supplying the seed to leading cultivators first free of cost, then at concession rates until they know its value.

(iii) If suggestions regarding paying allowances to members of the Tahsil Agricultural Association as made in reply to Question 3 (*b*) are given effect to, the best agency for increasing the growing and distribution of improved seed will be the member of the Agricultural Association.

MR. RAMCHARAN LAL DUBEY.

(iv) For the prevention of damage from wild pigs, cultivators should be induced to fence jointly.

(*b*) Late and heavy yielding varieties of rice should be introduced in areas commanded by the Wainganga Canal in place of the early and medium ones, as under that work there is an ample supply of water available from middle of June to end of March every year. Water from middle of June to end of October is used for irrigating rice crop but from November to March it goes to waste.

(*c*) Heavy yielding varieties of rice, *viz.*, *bhondu and luchai*, have been introduced through the efforts of the Agricultural Department in tracts visited by the staff of that department. *Khari* variety of sugarcane, which is better in yield than the local variety has replaced the latter in areas tackled by the Agricultural Department.

Since the opening of the Wainganga Canal, large areas of land, which used to grow inferior millets, have now been turned into rice land, and are now producing more valuable crops than before the opening of the canal.

QUESTION 12.—CULTIVATION. —(i) The M. S. N. plough is a good supplement to the existing implements for rice cultivation and the introduction of that plough is successfully being carried on by the Agricultural Department. The use of the Jat ploughs for sugarcane and garden cultivation should be demonstrated on a bigger scale than at present.

(ii) A little change is possible by introducing clover as a second crop after rice in irrigated areas under the Wainganga Canal.

QUESTION 14—IMPLEMENTS —(*a*) A small power sugarcane mill suitable for small cultivators workable by a 2 B. H. P. oil-engine is now most urgently required. The material of the mill will have to be very strong as hard canes are grown on this side. In the meantime, the Nahan bullock power mill should be worked by a small oil-engine of 1½ or 2 B. H. P. as this mill has been found to be the best for crushing the hard canes. The power cane mills, of which I have experience, are too big for small cultivators and not strong enough for dealing with the hard canes

There is considerable scope for the expansion of sugarcane crop in the Central Provinces as water is available from Government irrigation works. The only trouble in the expansion of the crop is the absence of a suitable power mill.

It may be mentioned here that the local supply of *gur* is too short and it has to be imported in large quantities from the United Provinces and Madras and Bombay Presidencies.

(*b*) Suggestions have been made already regarding paying of allowances to the Tahsil Association. Members will be useful in this connection also. If the member will be convinced about the superiority or usefulness of the implement, there will not be any difficulty in the adoption of it by the cultivators of that village.

QUESTION 15—VETERINARY —(*a*) I think no good will come by placing the Veterinary Department under the Director of Agriculture. Veterinary Surgeons may be appointed by the Agricultural Department for work on cattle farms and these officers may work under the Director of Agriculture.

(*b*) (i) and (ii) Veterinary dispensaries are under the control of District Boards. No expansion is noticeable in the number of dispensaries.

(*c*) (i) The veterinary dispensaries are not within easy reach of the cultivator. I think a system of treatment should be devised to help the cultivator near his place.

(ii) I do not think touring dispensaries are being fully used except at the time of outbreaks, if then the Veterinary Assistant Surgeon happens to reach the place in time. I think it will be better if some medicines are left with the malguzar of the village and he is trained to use them when necessary. The Veterinary Assistant Surgeon goes to a village when there is no work for him; or if there is sickness and treatment is to be continued he cannot afford to stop there and continue the treatment.

(*d*) On receipt of information about an outbreak, he goes to the village and if the villagers do not agree to inoculation, he is helpless. Information of an outbreak must come to the Veterinary Assistant Surgeon without any delay. I do not think segregation will be possible until spare cattle sheds are made in remote corners, so isolation and disinfection should be resorted to for the

present. There should be legislation for the disposal of diseased carcasses and compulsory inoculation. Prohibition of the movement of cattle will not be possible.

(*f*) Inoculation is done at the time of outbreaks. Some people agree to it. Others do not. No fee is charged for inoculation.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (i) Breeds will be improved by selective breeding. A start has been made by the Agricultural Department by rearing bulls on Government farms and supplying the improved bulls to cultivators. But the number of bulls available is too small to meet the demand. So this work should be expanded much.

(ii) Breeding proper goes on in uncultivated areas owned either by Government or Indian States and from these sources mainly the supply of work cattle in these Provinces is received. In such areas, conditions could be introduced that only selected cattle will be admitted and that a certified bull should be kept. Breeding also goes on on a small scale on lands owned by private individuals to whom should be explained the advantages of selective breeding and they will readily take to the use of better bulls and will also agree to castrate their bad bulls.

When the stage is reached when certified bulls are available, legislation could be introduced to castrate all bad bulls.

(*b*) (i) Overstocking of common pastures will decrease with the extension of cultivation, as the cultivators will not then keep extra and useless cattle. I think limitation should be introduced as to the number of extra cattle a cultivator could keep.

Non-cultivators in villages should not be allowed to keep many cattle. In some cases non-cultivators own herds and graze them on pastures meant for plough cattle.

(ii) I think it should be left to the cultivator to take care of his grass borders.

(iii) With the increase in the outturns of crops, the supply of straw can also increase.

(iv) I think the difficulty of absence of green fodder in dry seasons cannot be easily solved.

(*c*) The shortage of fodder is acute in the months of May, June and July. Young cattle suffer a set-back in the above stated months and begin to revive in August

(*d*) If hay be made in forest areas as cheaply as possible and means of transporting it improved, the fodder-supply will be improved.

(*e*) The above points should be discussed in meetings, in which attendance can improve if members be given travelling allowances.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) and (*b*) In the tract, where I am, I should say cultivators are not idle They are very busy in June, July and August in rice cultivation. In September and part of October they have to cut grass for their cattle, which are mostly stall-fed. In November harvesting goes on. December, January and February are threshing and rice pounding months. In March, they deal with the little *rabi* they have got. In April and May, there is light work. In these months, cultivators improve their *bunds*. They are much hard pressed at the time of transplantation and have also to work hard at harvest times, when they require help of their families also. The few who have taken up sugarcane cultivation pass a very busy time. The families of respectable cultivators cannot be expected to do any other work than agricultural on their own farms, for increasing their income.

No other industries except agricultural such as fruit and vegetable growing should be attempted, otherwise the cultivator will slacken his interest in agriculture and may in course of time leave it. In places where *bidi* making has started, agricultural labourers have turned into *bidi* makers.

(*c*) Out of the industries mentioned, fruit growing will be a general line for the cultivator and with it should go vegetable growing also. Bee-keeping has no future. Poultry rearing will be useful for those castes which have no social objection in the matter but it is worth while taking steps to introduce improved poultry rearing. Lac culture already goes on in places suitable for it. The cultivator makes his ropes all right. Basket making is restricted to a particular caste and will not be a general line of work.

MR. RAMCHARAN LAL DUBEY.

(*d*) I do not think Government should establish oil pressing, sugar making, cotton ginning and rice hulling. These may be left to take their own course. Wheat and rice straw and cotton seed are cattle foods, of which there is already a shortage. No attempt should be made to use them otherwise.

(*e*) There are already weavers, basket makers, carpenters, blacksmiths, masons, etc., who carry on agriculture as a subsidiary industry.

(*f*) Steps may usefully be taken to study the rural industries and to introduce improved tools and appliances

(*g*) Much can be done by improving the present wells and lifts. In many places, the subterranean water-supply is not made use of.

QUESTION 18.—AGRICULTURAL LABOUR.—(*a*) (i) In the Balaghat district, there is no necessity of taking any such steps. Labour is most in demand here at the time of transplantation in the months of July and August. Wages go very high at that time, so labourers are attracted from other places in the district, where rice is broadcasted.

(ii) Cultivation can extend in ryotwari lands in the Baihar tahsil of this district. I think proprietary rights on the land should be conferred in these areas to encourage immigration therein.

(*b*) In this district manganese mines have been opened, to which labour has been attracted and shortage of it is felt in the vicinity of the mines. Labour, however, returns to villages in the rainy season and is available for rice work. It will be sufficient to see that mines do not employ village labour in the months of July, August and November, when it is required for transplantation and harvesting of rice.

(*c*) Uncultivated lands are found mostly in ryotwari villages. Only tenancy rights are conferred on such lands. Conferring proprietary rights as suggested already might attract people to such areas.

QUESTION 20.—MARKETING.—(*a*) Under the heading of marketing, I can only say that the markets are overflooded at harvest times and prices are lowest at that time as cultivators sell off all that they have to sell for the payment of land revenue, irrigation charges and payment of debts, etc. I think the dates of payment of land revenue and water rate should be so changed that the cultivator will be able to store his produce and bring it into the market at two or three times in the year instead of the whole of it at one time. By doing so, prices will not fluctuate so much and the cultivator will obtain better prices for his produce.

QUESTION 23.—GENERAL EDUCATION.—(*a*) In the matter of education, I am of opinion that no radical change in the courses of the present system of elementary middle school and higher or collegiate education is necessary. There must be two sides of education, *viz*, (1) that for the sake of learning, and (2) professional. The education imparted in high schools and colleges belongs to the former type and considering the learning, which it has spread in the country, it cannot be condemned.

However, attention has to be paid to the professional side of education. I think introduction of agricultural education in the English middle or high schools will not do any general good. On the other hand, it might act as a deterrent of the non-agricultural class men who read in these institutions for the sake of learning or qualifying for some public services or professions other than agriculture.

Agricultural class men are also not to be expected to take higher forms of education in English in view of the low prospects present agriculture offers them.

So agricultural education should be imparted outside the present educational institutions and there must be higher and lower grades of it. The present agricultural colleges are all right for higher agricultural education and the introduction of agriculture in the vernacular middle and normal schools as proposed by me in my replies under Agricultural Education will be suitable for a lower form of agricultural education, which small and average cultivators may be expected to undergo.

(*b*) (i) On leaving the primary schools, a student is liable to go back to illiteracy if he does not keep his practice of reading; so there should be libraries in the villages and suitable literature in such libraries.

(ii) In this district, compulsory education has not been introduced in rural areas. Nor do I think will such a step be possible for poor men as they are

not able to support the small boys of school-going age who have to work for their parents or earn their livelihood.

(iii) The small proportion of boys in rural primary schools is due to the fact that men passed out from these schools have not proved themselves better cultivators in any respect. They are, however, more intelligent and nobler than illiterate men and everybody aspires to have his children educated. Poverty and insufficiency of primary schools, I think, are the causes of the slow progress of education in rural areas.

Oral Evidence.

28445. *The Chairman:* Mr. Ramcharan Lal Dubey, you are from the district of Balaghat?—Yes.

28446. What is your occupation?—I am a cultivator. I am a retired Agricultural Assistant.

28447. You are a retired officer of the Agricultural Service and are you cultivating land yourself?—Yes.

28448. How many *bighas* are you cultivating?—I have 35 acres of land.

28449. *Sir Ganga Ram:* How much is a *bigha* here?—The term *bigha* is not known in these parts, but I think 2/5ths of an acre make one *bigha*.

28450. *The Chairman* What type of cultivation do you have?—My main crop is sugarcane.

28451. Irrigated?—Yes, under the Pathree Tank which has a perennial water-supply; I have also a plot of 11 acres where there is well irrigation.

28452. How long have you been cultivating this land?—For the last four years, although I retired only two years ago.

28453. Did you introduce the cane or was the cane cultivation in existence before you took up the land?—There was no cane cultivation. The Government farm was started 10 years ago and there was no sugarcane under irrigated tanks: that was the first. In the beginning the people took to sugarcane but gave it up. The starting of my farm has given some stimulus to the cultivators and they have now been increasing their area year by year. The area last year was 50 acres under that tank and this year it has risen to 70.

28454. What canes are you planting?—I started with *khari* cane. The year before last I introduced Coimbatore cane also on my farm; I had only about half an acre and it gave a very good yield. Last year I grew 5 acres. The crop was crushed this season but I found the canes a bit too hard and I do not think that I will be able to keep on with it

28455. Is that because you have not a mill suitable for crushing Coimbatore cane?—Yes.

28456. You state in your note that a power mill is also needed?—Yes, I am at present crushing with a bullock mill and this is not suitable for Coimbatore cane.

28457. *Mr. Calvert.* An iron bullock mill?—Yes.

28458. *The Chairman:* Which Coimbatore cane are you using?—210. The Agricultural Department recommended 210, 219 and 226, three varieties; 210 is an early cane; I have a small area of 219, but this is a late cane; 226 suffers a little from defective germination. I have much of 210, about half an acre of 219 and half an acre of 226.

28459. What is the soil?—My soil is sandy in one field; the other field which is commanded by the irrigation tank is a sort of alluvial soil.

28460. I understand from your last answer that your water-supply comes from a tank?—Yes, for half the area it comes from the Government tank; for the remainder I lift the water from a well.

28461. By bullock power?—Yes.

28462. Did you sink the well?—Yes, I had sunk the well myself and I have to repair it every year. In the first year I used the leather *mote*, then I ordered a Persian wheel from the Punjab.

28463. *Mr. Calvert:* An iron Persian wheel?—Yes. The people did not know of it but on my ordering it some four or five men also ordered it and are using it.

28464. *The Chairman:* So that your example has been followed?—Yes.

28465. Are you satisfied with the working of the Persian wheel?—Yes. It has a better lift than the *mote*.

28466. What did it cost you by the time you had put it up?—I had to pay Rs. 180 (that is to say, Rs. 160 cost price and Rs. 20 for railway freight). But my experience is that the well keeps slipping.

28467. *Sir Ganga Ram:* What would it cost you to make the well *pucca*?—The soil is sandy and I am not myself a mason. I asked some masons to construct the well but they said it would not be possible to go deep enough. The well should be sunk deeper as a matter of fact, but nobody knows how to do it.

28468. *The Chairman:* At what depth did you find the water?—Only 12 feet below the surface.

28469. How deep do you think the Persian wheel will work?—I am told that it can work up to 30 feet; it gives very satisfactory work at 20 feet depth.

28470. Would you tell us a little of your own experience in the matter of manuring your canes? What manure are you using?—I use oil-cake and ammonium sulphate, a combination of the two.

28471. And that has given good results?—Yes.

28472. Are you putting any cattle manure into the land at all?—It is not available. My own cattle-dung is not sufficient for my requirements and the shortage has to be supplemented by these artificial manures.

28473. You have provided us with an interesting note of the evidence that you want to give. May I ask you one or two questions on that or would you like to supplement your written note by any statement at this stage?—No.

28474. How long were you in the Agricultural Service?—For 20 years.

28475. What grade did you reach?—I was in the subordinate grade all along.

28476. Did you yourself do any propaganda work?—I served in certain capacities, as Farm Overseer in the beginning, as an Agricultural Assistant on demonstration duty, as Superintendent on three big farms of the department and as Superintendent of the biggest cattle-breeding farm in the department.

28477. What form of propaganda do you think is most effective in persuading cultivators to adopt improved methods of crops? Demonstration on farms controlled by the Government or demonstration work on the cultivator's own holding?—We must work through the leading cultivators.

28478. To persuade the leading cultivators to make a change so that their example may be followed by the smaller men?—Yes. That is what I noticed in my own case.

28479. Have you ever considered the possibility of Government, through the Agricultural Department, taking the risk of experiment off the shoulders of certain selected cultivators, that is to say, guaranteeing the cultivator against loss if he attempts a particular experiment or introduces some new crop?—The cultivator will not take to anything new unless he is satisfied that it is advantageous.

28480. That is because he cannot afford to take any risks, is it not?—So far he has not been able to try anything. He has only been advised to take up things which have been found advantageous by the Agricultural Department.

28481. You do not think that the existence in the culivator's mind of the possibility of risk is really what deters him from a more progressive policy?—At present to an average cultivator, say to the small cultivator, there are not many things to be told, except a change of seed, implements, or manures if he takes to garden cultivation, and a few other items.

28482. *Prof. Gangulee:* Chiefly pure seed?—Pure seed, implements, and in some cases improved methods of cultivation.

28483. *The Chairman:* Were you on the land before you went into Government service?—No, I belong to the non-agricultural class

28484. Do you think that you see amongst cultivators any demand for general education for their sons?—Yes, they do aspire to education for their sons, but they cannot afford it on account of the schools being at a distance from their homes. Moreover, the boys have to work for their parents.

28485. We were told by a previous witness of, I think, wide experience in this district, that he thought he saw only a very slight movement amongst cultivators in favour of education. Would you agree with that as a fair statement of the case?—That might be the case in this Division. The people are more backward here than in my district; I have noticed that there the cultivators do aspire to education for their children.

28486. Now with regard to your suggestion that officers of the Agricultural Department should be allowed to retire on proportionate pension if they wished to take up private farming, is it your suggestion that it would be practicable to insist upon their taking up farming as a condition of their enjoying proportionate pension?—Yes. Some officers may wish to do their own farming for want of better prospects in the department, or it may be that they would like their own farming better than service. They are tied to the department because they cannot retire unless they have finished their service.

28487. You have had very considerable experience of Government cattle farms?—Yes.

28488. Are you satisfied with the efforts being made by Government at this moment?—Yes, very valuable work is being done.

28489. Do you think it is on a sufficiently large scale?—I do not think so; it must be multiplied many times over.

28490. Do you think that there exists amongst cultivators any appreciation of the importance of improving their cattle?—Yes, from the fact that the few bulls which are produced at these farms are sold off most quickly and the demand is not met for want of a sufficient number of bulls.

28491. Is it of very much use improving the breeds of cattle in this Province if they are not to be better fed than they are at the moment? Is not better feeding just as important as better breeding?—Yes, both the questions go side by side, but in places where cattle-breeding is going on there is much more grazing available than in cultivated areas. Breeding proper here does not go on in villages, but in uncultivated places belonging to Government or Indian States.

28492. And then the cattle are brought from these districts to the cultivating districts?—Yes.

28493. It is no use having plenty of fodder at the place where the cattle are bred if the cattle are not to be provided with fodder at the places where they are going to work, is it?—There is no good in introducing new breeding farms in places where there is no fodder at present.

28494 But the important thing is that the cattle belonging to the cultivator whether used for purposes of giving milk or for providing draught power, should be better fed: that is the aim, is it not?—Yes, the cultivator does try to keep his cattle well fed.

28495. Are you satisfied with the condition of the cattle as a whole in this Province?—The work cattle are maintained by them in fairly good condition. There are some extra cattle which go on increasing and these are not looked after very well.

28496. On page 107 you say that you think the dates of payment of land revenue and water rate should be so changed that the cultivator will be able to store his produce and to market it at two or three periods in the year instead of the whole of it at one time. You do not suggest that the land revenue collection should be taken bit by bit at three periods of the year. You suggest that the time of the collection should be postponed?—Yes, as for instance in the rice tracts the major part of the land revenue is collected in the month of February. The crop is harvested in November, is ready for the market in December and January, and immediately after that they have to take it to the market for sale. At that time there is a surplus supply in the markets. But if the date of payment of land revenue be changed to May or June, the cultivator will get more time for disposing of his produce, from December up to the month of May.

28497. Do you think there is any danger that an arrangement of that sort might lead the cultivator to spend the money which he gets for his crop, and then perhaps to borrow in order to pay the land revenue?—I think he is now very careful to at least keep by him the amount of land revenue.

28498. He is now, because the demand comes so very soon after the sale of his produce. Do you think he would be as ready to keep the money to pay

land revenue by him if he sold, let us say, in May and had not to pay his land revenue dues until December?—He will be very careful in that respect; he will see that he does not miss paying the land revenue; the tenancy right prevails there and he will not let the land go away from him simply for non-payment of land revenue.

28499. What other crops are you yourself growing?—I grow rice on 10 acres, watermelons on 2 acres; in the coming year, I intend to grow potatoes also on 2 acres.

28500. Will that be for the first time?—That will be for the first time.

28501. Where is your market for watermelons?—I am near a railway station, and they can be exported to Nagpur and Jubbulpore.

28502. Do you find you have a good demand for watermelons?—Yes; I am quite sure that the supply of watermelons, at least in Jubbulpore, comes from Hoshangabad district.

28503. Where do you propose to get your seed potatoes from?—From Naini Tal in the United Provinces.

28504. Do they grow seed potatoes there?—No, but they keep a supply of seed on the Government farms and we get supplies from there.

28505. So that, the Government farms in this Province have no seed potatoes?—No; they have to renew their seed supply every year. Recently the Bilaspur farm has done so, and the Chhindwara farm is also doing it.

28506. Where do those seed come from?—I have no knowledge about it.

28507. Are you following a regular rotation on your land?—No rotation is possible for rice, except that heavier types of soils can be sown with pulses after the rice crop, as a catch crop. With sugarcane, I have not so far done any rotation. I keep the land fallow; in the rains I cultivate it and in the following year I plant it with sugarcane.

28508. You can manage a catch crop on a rice area without disturbing the land for the next year's rice crop?—Yes; that is the system in vogue here.

28509. *The Raja of Parlakimedi:* In your part of the district, what are the main crops grown?—Rice is the main crop; there is a little wheat; rice is followed by pulse crops; they are the catch crops supplying the required pulses to the cultivator.

28510. Is all your land a paddy growing area, or is it dry?—I have 10 acres of paddy on my farm.

28511. What varieties of paddy do you grow and where do you get them from?—The *bhondu* and *luchai* varieties. They are the selections made by the local Agricultural Department.

28512. Have you at any time made a study of the paddy crops grown at Coimbatore?—We have not imported paddy seed from Coimbatore.

28513. What green manure crop do you chiefly grow in your paddy land?—I am not manuring my paddy at all at present.

28514. No manuring at all?—No.

28515. Not even farmyard manure?—The supply of farmyard manure is very meagre and is not sufficient for my requirements. *Sann* hemp is recommended by the Agricultural Department; on their farms they grow it in the hot season, with irrigation from Government tanks; but the conditions of water-supply are not satisfactory and so I have not been able to introduce this green manure crop for paddy on my farm.

28516. It need not be grown as an irrigated crop at all, if it is sown early enough?—We have tried it sufficiently in the rice fields; it does not grow, because the rainfall is so heavy that it makes no progress; there is hardly one month's time from the time of sowing to the time of transplanting the seedlings, and it makes no progress in that time.

28517. In your land, what is the yield of paddy per acre?—I get 2,000 lbs., but the cultivators in my district do not get more than 1,200 lbs. on an average, although in some places they do get 2,000 lbs. also; the average is not more than 1,200 lbs.

MR. RAMCHARAN LAL DUBEY.

O

28518. *Sir Ganga Ram*: Is 2,000 lbs. very high?—In the opinion of the ordinary cultivators, it is high, but I am not satisfied with it; I am aiming at taking it up to 4,000 lbs. because in favourable situations in this Province we do get 4,000 lbs.

28519. *The Raja of Parlakimedi*: Without manuring, how did you effect this increase of yield, as compared with the yield of the ordinary ryot on his holding? Have you a better soil?—I have a better soil, and I have some advantage of silting in my fields, I am on the bank of a river; adjoining my farm there is the general pasture to which the cattle of all the cultivators come, and I receive the drainage of that portion into my fields.

28520. It will be interesting information to you that in my part of the country, we get not less than twice to three times of what you are getting from your fields here?—Is your outturn 6,000 lbs. an acre?

28521. It is 4,000 lbs. to 5,000 lbs. an acre?—That is what I am aiming at; I am not satisfied with 2,000 lbs.

28522. Have you tried to grow rice with green manure?—In my answers I have suggested that green manure will not be a feasible proposition for general adoption here. I have suggested that the cultivation of *karanja* trees should be started; I have information that in the Madras Presidency they manure their rice with *karanja* leaves.

28523. Not everywhere, but only in certain parts. In the whole of the Northern Circars, *dhaincha* is grown as a green manure crop for paddy lands. It is a fast growing plant, and easily mixes with the soil?—We tried *dhaincha* along with *sann* hemp in the beginning when the Agricultural Department began its work in the division, but that crop also did not do well here; my idea is that *dhaincha* will grow in rich fields only.

28524. But when you silt your fields, it is rich enough to grow this sort of green manure crop?—It is too wet, mostly, it is full of flood water.

28525. To what extent do you make use of buffaloes for your cultivation in paddy land?—I do not go in for buffaloes; I keep bullocks only.

28526. Not even for puddling and levelling?—We have fair-sized bullocks and they do the puddling and levelling all right.

28527. Is the seed broadcast or transplanted?—The whole of it is transplanted.

28528. How do you do it. Is it by single seedlings or in bunches?—On my rich fields I have only single seedlings, but in poorer fields I have to do it in twos and threes.

28529. How many measures of seed do you use per acre?—On an average I am using 50 lbs. If I did it in single seedlings 30 lbs. would do.

28530. Even less ought to do?—Yes. I was on the Raipur farm, and my own experience is that in one year only 10 lbs. of seed were used for one acre.

28531. Do you manure your seed beds?—They are heavily manured.

28532. What manure do you use?—Cattle-dung.

28533. Do you pen sheep also?—That system is not prevalent in my part of the Province, but in the Chanda district it is largely practised.

28534. What is the type of cattle you would require in your parts?—The Gaolao breed is much in demand.

28535. Is it a dual purpose animal, or is it a draught animal?—I should say it is a dual purpose animal, because the cows give 3 to 4 seers of milk whereas the local cows give only ½ to 1 seer of milk, but they are not so good milkers as some of the cross breds on the Government farms.

28536. Are you yourself taking any interest in the improvement of the indigenous breeds of cattle?—No; I have not many cows; I only keep one or two milch cows sufficient for my milk requirements.

28537. Do you not think that you will be doing good service if you get a good bull and try to improve the breeds in your neighbourhood?—I am not doing philanthropic work at present.

28538. Is there anybody who is doing that sort of work?—No.

28539. Is any cane grown in your parts?—There used to be the *kathai* and *mungi* varieties, but since the introduction of the *khari* variety by the Agricultural

Department, they have become extinct in places visited by the Agricultural Department; they are now seen in patches where the Agricultural Department has not been able to reach.

28540. Are they grown as unirrigated or irrigated crops?—Irrigated, from wells mostly.

28541. Why has the cultivation of sugarcane been given up?—For want of manures. Formerly they did not know the manures and were not applying any, but now they have taken to the use of manures and the cultivation is now increasing.

28542. *Prof. Gangulee* What manures?—Oil-cake, nitrate of soda and ammonium sulphate.

28543. Have those manures been suggested by the Department of Agriculture?—Yes.

28544. *The Raja of Parlakimedi*. What is the net profit per acre on a cane-growing area?—The outturn of the cultivator is very low because he does not fully manure his crop, but I am getting a net profit of Rs. 200 already on my farm, and I am of opinion that the net profit can be still further increased.

28545. *Sir Ganga Ram*: You make a profit of Rs. 200 an acre?—Yes, but I am hopeful that this net profit can be increased to even Rs. 300 per acre; by using a power mill the cost of crushing will not be so high.

28546. Why do you not get a power mill and try to increase your profits?—If I had a power mill I would increase my cane area to 20 acres, but I am handicapped by shortage of funds.

28547. Why do you not try the *motes* drawn by cattle for irrigation?—They have been tried and condemned.

28548 Do you try roller mills also; they are quite efficacious in the extraction of juice?—I am using them, and also the bullock-power cane mills; but then my work is very greatly restricted; I cannot increase the cultivation. With great difficulty now I am dealing with 10 acres of sugarcane. I had another variety of cane and I experienced great difficulty in crushing; my bullocks were overstrained and have suffered on that account

28549. Buffaloes will be more useful for that work. In my part of the country, buffaloes are used for these mills and they can stand the strain?—Your country must be cooler than ours.

28550. There is more vegetation there?—The buffaloes are not able to work in the sun.

28551. You must create a shade for them and you must have a few sets working by turns?—Some people do use buffaloes; but the difficulty is that they should work by night whereas with bullocks we can carry on the work by day.

28552. Do you have cattle diseases breaking out in epidemic form frequently?—Not frequently. There are cases where cattle die on account of some disease, say five or six in a village in a year.

28553. Do the ryots in these parts welcome the present method of eradicating those diseases by inoculation?—I should say they do not know it much.

28554. Is anything being done in that line?—The Veterinary Department tries to do it and, wherever the people agree, they inoculate; but the difficulty experienced is that timely action is not taken. A report goes to the Veterinary Assistant Surgeon; on receiving that report he comes to the spot; then he takes the blood and sends it for confirmation of the disease and after receiving the reply from the superior officer he goes to carry out inoculation, and by that time probably the mischief has already been done or the disease itself may have subsided.

28555. It is entirely due to want of staff, is it?—Yes.

28556. Would you like to see the staff increased in that department?—Yes, of course.

28557. As regards irrigation, what are the rates usually adopted?—Only rice is irrigated at present, leaving out the question of sugarcane which is not general. The rate commenced from 8 As. per acre and this year it is Rs. 3-4-0. Under the present agreement, within a period of ten years from the commencement the rate should go to Rs. 3-12-0 by an increase of 4 As. every year.

28558. Does it depend upon the standard of the crops or what?—They have a regular increase. They want to bring it to Rs. 3-12-0 by the end of ten years.

28559. Is it adopted in all cases of irrigation, river, channel, tank or any other irrigation?—In all Government works the same rates are adopted.

28560. *Sir James MacKenna:* Have you any experience of Pusa wheat?—I have not grown it on my own farm; but on Government farms I have grown Pusa 100.

28561. What is your experience of that?—It gives a better yield than the local wheat.

28562. Much better?—The outturn of wheat is very low here. I should say it is not more than 500 lbs. per acre, which is considered to be a very good crop. An increase of even 50 lbs. per acre with some other variety is welcome and that was found to be the case with Pusa wheat. But then there is scope for improving the local wheat also. In the north of the Province, to which I belong, the local wheat has been improved, but no such attempt has been made in the case of Chhattisgarh wheat.

28563. But so far as Chhattisgarh is concerned, the introduction of Pusa wheat has been a distinct advantage to it?—I do not know how much is distributed every year and how much extension is taking place; but I can give this opinion that it is decidedly a better wheat than the two local varieties of wheat.

28564. Have you been a member of the Local Legislative Council?—My position is too humble for that.

28565. Do you follow the proceedings of the Council?—I do.

28566. What do you think the attitude has been towards agriculture? Friendly?—Not one of sympathy. They have rather criticised the work of the department and progress is therefore handicapped.

28567. Has the budget been seriously cut by the Council?—Yes; in the last session it was cut, I think, to a great extent.

28568. *Prof. Gangulee:* What do you think is the reason for the Legislative Council not taking much interest in agricultural matters?—Because the members are not agriculturists.

28569. But surely they have an interest in agriculture, the premier industry of the country?—I do not think they have.

28570. You say you cultivate about 40 acres of land?—35 acres, of which 10 acres are under rice and 10 under sugarcane.

28571. Do you cultivate yourself or by tenants?—By my servants.

28572. You employ labour?—Yes.

28573. You pay them daily wages?—Monthly wages.

28574. Could you give us an idea of the cost of cultivation per acre of paddy?—Yes, roughly Rs. 20 per acre.

28575. And the cost of cultivation per acre of sugarcane?—Rs. 200 per acre.

28576. And you say your net profit out of sugarcane is Rs. 200 per acre?—Yes.

28577. What would be the net profit from paddy?—My crop gives me Rs. 40; but the ordinary cultivator gets Rs. 20.

28578. Because you use better seeds?—Of course I use better seed, no doubt; but then my outturn is higher.

28579. Due to better manure, I suppose?—As I have just said, I have a very favourable situation which is not general.

28580. Where do you get your seed supply from?—I am very near a Government demonstration farm.

28581. You get your seed from the Government farm?—Yes.

28582. What is the cost of the seed that you get?—Their rate is 30 lbs. per rupee.

28583. The rate is increasing lately, is it?—It had increased very much; once it had gone up to 20 lbs. per rupee and now it has come down to 30 lbs. per rupee.

28584. Do you distribute seeds to your neighbouring farmers?—No.

28585. You do not buy in quantity from the Government farm and distribute seeds to the tenants in the neighbourhood?—No; I purchase seed sufficient for my own requirements.

28586. Now with your experience as a farmer, can you tell us what significant changes you observe in the method of cultivation in your district?—The recommendations made by the Agricultural Department at present are for changing the seed, for using the iron plough instead of the wooden one, and changing the method of cultivation, and so on.

28587. What I want to get from you is this: to what extent are these recommendations of the Department of Agriculture being adopted by the cultivators in your district?—As far as the Agricultural Department is able to work, it is successful; but this is a big country and the staff of the department is very small; if private individuals would also help the progress could be increased very much.

28588. I understand that; but what I wanted to know is, do you find any significant changes in the methods of cultivation in your district?—I do find people aspiring after good seed; the improved iron plough is being easily sold now.

28589. What is the price of an iron plough?—In the last season it was sold for Rs. 8-4-0.

28590. Do you find that the farmers in your neighbourhood are utilising better implement and better seed?—Yes; but then I may also tell you that these varieties of seed are not fit for general adoption. If you go to a village where the improvements have been introduced you will notice that they are not adopted wholesale.

28591. For the introduction of better ploughs and better seed do you give the entire credit to the Department of Agriculture or to any non-official help?—The department was helped to some extent by non-officials.

28592. Are you a member of any non-official association?—I am a member of the Tahsil Agricultural Association.

28593. How many members come from your district?—There are about sixty or seventy members, but very few attend the meetings.

28594. On page 101 you make a very interesting suggestion that the malguzars or leading and influential cultivators in the village should be paid for the trouble they take. What have you actually in mind? How are they to be paid?—They should be paid the travelling allowance and the daily allowance. As a matter of fact, the real cultivator is very busy and we have to remunerate him for the loss which he will suffer by his absence from the farm.

28595. I am not talking about the ordinary cultivator; you mention here about the malguzar?—Yes, the malguzar who is in touch with agriculture is very busy and the malguzar who is not in touch lives in a town and does not count.

28596. These malguzars are also members of these associations, the District Association, the Taluk Association and the Circle Association?—We have only the Tahsil Association.

28597. I think some of these malguzars are members of that association and you want the Department of Agriculture to pay for the trouble that these members take; is that right?—A new selection will have to be made to get the right type of men.

28598. Do you think it is a sign of public spirit that you want payment for your trouble?—At present the difficulty is there is no proper attendance in the meetings and this is one of the ways in which you might try to ensure attendance, though I am not quite sure that you would succeed even then.

28599. With regard to the new varieties that you grow here, do you get a premium price?—Yes, we do.

28600. You get a premium price?—Yes, a slight premium, say 14 per cent a *khandi* of local paddy is sold for Rs. 7 while a *khandi* of improved rice will be sold for Re. 1 more.

28601. How does this improved paddy compare with local paddies in yield?—It is reported by the cultivators that by taking to this improved paddy they have slightly increased their outturns.

28602. Have you any idea to what extent it has increased?—Well, that is such a difficult question to answer; you know the outturn of paddy varies from 500 lbs. to 5,000 lbs., so that you cannot say how much the increase is due to the improved variety, but the cultivator who has been growing the local varieties for such a long time appreciates these varieties and says that he is now getting a better outturn.

28603. He is getting a better outturn from these new paddies?—Yes.

28604. You have no idea of the increase of yield?—My conclusion is that the improved variety is at least 10 per cent better and it would probably not be an exaggeration if I said 15 per cent.

28605. Irrespective of better cultivation and other factors?—With the same cultivation as is given to the local paddies.

28606 Can you tell us why there was no success in introducing transplantation of paddy in your district?—In my district they have transplanted from time immemorial.

28607. In the other district?—I was serving there and I was carrying on the work, the difficulties in the way were want of irrigation arrangements, the scattered fields and the cattle were too small for the operation of transplantation.

28608. Those are the reasons to which you ascribe the fact that transplantation of paddy has not been a success in this district?—I am also inclined to think that the rainfall of this tract is short of what is required for transplantation; for transplantation more rain is needed

28609. Do you get any water-supply from the Government's irrigation works?—Yes, I get water for the irrigation of my rice as well as for part of my sugarcane area.

28610. Can you tell the Commission the system of agreement you have to enter into with the Department of Irrigation?—When the works were ready and the Irrigation Department was able to supply water to the cultivators, a system of agreement for irrigation was introduced for a term of ten years; in the beginning the water rate for us was calculated and is gradually being increased at the rate of 4 As per annum and has got to go up to Rs. 3-12-0 per acre.

28611 What is the system; does the whole village have to enter into an agreement, or the individual farmer?—In the commanded areas if 80 per cent of cultivators agree to take water, the remaining 20 per cent will also be considered to have agreed.

28612. For water lifting you have introduced the Persian wheel from the Punjab?—Yes

28613 Have any other malguzar visited your farm and watched the operation of this Persian wheel?—Yes, four or five malguzars came who had heard that I had got an improved lift; they knew me and wanted to see if I could suggest something to them; they came, saw the lift, purchased it and are using it.

28614 So that they have taken to this new method of water lifting?—Yes.

28615. On page 103 you say it is highly desirable that the size of holding for rice should not be less than 4 acres Why do you put it at 4 acres; have you worked it out that 4 acres is the minimum economical holding for rice?—At the present time, with a pair of bullocks, a cultivator with his family, assisted at times by some extra labour, does cultivate some 6 acres of rice; but then he is over-worked. 5 acres is liked very much, but as we cannot prevent this fragmentation, I have taken this figure of 4 acres so that a little more scope may be allowed to other shareholders.

28616. You want to bring about this consolidation by arbitration. How?—By panchayats The parties should first try to settle it amongst themselves; but if they cannot, it is necessary that legislation should be introduced to provide for arbitration.

28617. Have you had experience of arbitration in this matter?—No, it is a new move.

28618. Nothing has been done?—No.

28619. You have no data to show us that some success has been achieved through arbitration?—No, it has never been attempted

28620. Is it your view that indebtedness in your district is increasing?—It is my opinion that there ought to be no indebtedness if a fair rate of interest

were charged. The cultivator pays and pays and yet he is not free; he pays much more than he ought.

28621. Are you a member of any co-operative society?—No.

28622. You are not in touch with the co-operative movement?—No, I am not.

28623. Do you lend money yourself?—No, I am not a moneylender.

28624. On page 103 you make reference to the mortgage question and you say that the lands have passed from the hands of the cultivators into those of moneylenders. Is it your experience that that tendency is still marked in your district?—Where cultivators have a right of transfer or sale the lands have passed from them, but generally there is the tenancy system and the cultivator has not the right to sell.

28625. You have also expressed your views with regard to education; is there any school in your own village?—No, not in that village, but at a distance of a mile and a half there is the primary school

28626. Have you yourself made an attempt to introduce better schools in the district?—To introduce better schools?

28627. Well, any school for that matter?—I do not think that is a matter for the individual.

28628. You think there is a general demand for education?—Yes.

28629. A demand amongst whom?—The cultivators, the labourers, everybody.

28630. Do the malguzars and landlords take any interest in educational matters?—They educate their children at any cost; they even send their children to schools at long distances and get them educated.

28631. *Mr. Calvert:* In your note you say that the farm of the ordinary farmer does not offer adequate prospects for one trained at the Agricultural College. Is it your opinion then that the curriculum at the Agricultural College is not suited to the type of cultivation here?—It is costly and a small farmer cannot undertake it. The men turned out from the College will be quite suitable for big farms. By a small farm I mean a farm managed by a cultivator with the help of his family. As there is a shortage of labour, only the small farmer is seen to prosper. Employers suffer a loss.

28632. We are told that the average holding is between 5 and 10 acres?—Yes.

28633. Is there no opening for these cultivators to get training in the cultivation of their 5 or 10 acres?—There are some crops, as for instance, sugarcane.

28634. Where can they be trained to cultivate 5 or 10 acres?—In general cropping we might suggest to him to change the seed or the implement; beyond that we have not much to tell him. There are some crops from which a substantial profit can be made, as for example, sugarcane, which I am cultivating, but everybody cannot be expected to cultivate sugarcane; if they did, there would be over-production of the crop and it would be sold at a loss.

28635. You suggest plots in which vegetables should be grown?—Yes.

28636. Is there any caste prejudice against the growing of vegetables?—No.

28637. You say that the leading cultivators do not help in demonstration?—Yes, they do not take enough interest.

28638. But we gather from the printed note that the Agricultural Department has directed its demonstration towards the bigger cultivators?—Yes.

28639. Would they have achieved better results if they had tried with the smaller men?—The men that the Agricultural Department has chosen are doing the work all right, but if they would help to the extent to which they could much progress would be achieved.

28640. The point is that the bigger cultivators are not helping?—Yes, there ought to be help from the malguzar of the village, or, if he is absent, the leading cultivator, the influential cultivator in the village

28641. He ought to, but you say he does not help?—Yes, he does not help.

28642. Do you think the demonstration should be directed towards the smaller cultivators?—Through the medium of these bigger men who carry influence in the village.

28643. What kind of influence do they carry? Is their influence in favour of better cultivation?—The rich men are generally respected, and agriculturally they also carry some respect as being better men, supplied with better equipment for carrying on their work in a better manner than the poorer cultivators can do.

28644. Actually are they using their influence on the side of improved agriculture?—They are not doing anything in that direction at all.

28645. You used the expression "leading cultivators"?—Yes.

28646. In regard to what are they leading?—They are the men I have just described who have the proper equipment for carrying on their farms in a better way than the poorer cultivators; they command respect in the village and if they took an interest in improved agriculture their example would be quickly followed by other men.

28647. Yes, but you say they do not take an interest in agriculture; I want the facts?—In their own local matters they do

28648. Do the malguzars lead in improved agriculture?—Yes, they do in local matters; if they lead in improved methods, the improved methods will spread.

28649. But do they lead in adopting improved methods?—I should say no, and that is why I say they should be made to do so.

28650. In another connection, you say a bank should be opened and loans given on the recommendation of the Agricultural Department. Would you like to give your opinion on the kind of bank you advocate?—The same sort of bank as the Co-operative Central Bank.

28651. Later on you say that you think limitations should be introduced as to the number of extra cattle the cultivator could keep? Have you any proposal as to how you would limit that number?—Yes; in cultivated areas where there is no grazing available the number of animals which the cultivator keeps, over and above his requirements, for example, an extra milch cow or buffalo, this should be limited.

28652. But how would you limit it?—A man owning say 4 or 5 acres of land should have so many cows.

28653. But how could you limit it? What would the man do with the extra cattle? Would he dispose of them?—He could sell them.

28654. By law?—He could be allowed to keep the number of animals which he should keep and he could dispose of the extra cattle as he liked.

28655. *Sir Henry Lawrence:* Would he sell them to the butcher?—To men who have not got cattle and who wish to purchase them. There is a big cattle market and cattle business is going on. If a cultivator is in need of money he sells off his bullocks and where do these animals go but to those men who have not got cattle.

28656. *Dr. Hyder:* Is it a good or a bad thing that they should not have cattle?—Well, there are areas in which there is a shortage of cattle, and there are some areas in which there is a surplus.

28657. *Sir Henry Lawrence:* Do you want to have the numbers brought down?—Yes, I want them limited.

28658. And you would not have any man keep more than a certain number of cattle?—Yes. In my village there are two non-agriculturists who have got herds of cattle and they are being grazed on land intended for plough bullocks.

28659. Such a law would not give rise to rioting?—I do not know.

28660. *Mr. Kamat:* You have made certain suggestions in your memorandum which I would like you to expand further. For instance, you suggest that men of ripe experience in the different grades of the Agricultural Department desirous of carrying on private farming should be allowed to retire on proportionate pension and that they should receive from Government a subsidy or loan on easy terms? Do you think there are many people who would be willing to retire on proportionate pension in the Agricultural Department?—I am not in touch with all the staff at present, but I can confidently say that at least three men in responsible positions would like to retire.

28661. Supposing in a Province three men in the Agricultural Department retire and do private farming, will it help that Province much in your opinion?—No. Out of, say, ten officers with whom I am in touch if three men retire that is not a bad proportion.

28662. And what guarantee have Government before they give a subsidy or a loan that these people would be able to repay that loan if their private farming failed?—You are spending so much money on the development and expansion of the Agricultural Department.

28663. So this money should be written off?—No, you are spending so much money on the expansion of the department and in case of failure the land will be there. The money would be invested in, say, implements, wire-fencing, bullocks, and the man's house and property would be there as a guarantee.

28664. That should be attached by Government?—Yes.

28665. Another suggestion which you have made is this. You have been emphasising that travelling allowances to members of your association should be paid and your suggestion is that a small cess of about half an anna per rupee on the land revenue should be levied? Could you give me an idea how much this half an anna cess in the land revenue would bring in the Central Provinces?—If I knew the total collection of land revenue I could work it out.

28666. In that case I could work it out myself also. What is the total land revenue of your Province?—I do not know.

28667. You want all of the cesses to be devoted to the payment of travelling allowances, not towards any agricultural reform?—I did make a rough calculation for my tahsil and I came to the conclusion that a cess of half an anna would meet that expense; it was a rough estimate only.

28668. Assuming that half an anna were to be levied, would the payment of allowances to members be the best way of spending it for agricultural improvement?—I think so, because agricultural improvements will best spread in the country through the medium of the leading cultivators on the spot, but these men are not taking enough interest and I suggest that we might try this and see whether it would work or not.

28669. One more suggestion which you make is with reference to veterinary treatment. You suggest that in the villages malguzars should be trained to use certain medicines by the veterinary people. Is that a workable proposition?—That is my opinion.

28670. What sort of medicines have you in mind?—Treatment for ordinary diseases, that is treatment for wounds, for diarrhœa, even for rinderpest.

28671. Then you have another suggestion that for purposes of fuel certain trees should be planted by cultivators, that is to say, if they have 6 acres, 1 acre should be devoted to the planting of trees. Do you think a cultivator having 6 acres would give 1 acre out of that to planting out trees, rice and sugarcane being as profitable as you have described them to be?—I have also said that by using the leaves of those trees as manure and by the use of the cattle-dung which will be saved by the introduction of fuel, the outturn will be so increased that the cultivator will get more grain from the remaining area than he is getting at present.

28672. Supposing you yourself have 30 acres, would you devote 3 or 4 acres out of that for planting trees rather than for sugarcane?—That is what I wish. I have already started that work because I am at a long distance from the forest and I am supposed to bring my supply of firewood from the forest. Why should I not have my own supply of fuel at hand on the spot?

28673. How long will these trees take to grow?—They are quick-growing trees. I think that in ten years they will be big enough.

28674. A man has to wait ten years before he can get his fuel from these trees. Till then cow-dung has to be used? After ten years what would be the value of the fuel from one acre? How much would it bring in at the end of ten years?—In one acre by keeping a spacing of 40 feet some 25 trees will be planted; the cultivator will use one or two trees out of this and plant one or two.

28675. *The Chairman:* You would have a rotation?—Yes.

28676. When you say 40 feet spacing, are you thinking of a catch crop between the trees?—When they are small a catch crop can be taken.

28677. Do you really suggest that the type of plantation best suited for providing fuel is that in which trees are planted 40 feet apart?—Considering the size of the *karanja* tree I think so. I am referring to this particular tree.

28678. *Mr. Kamat:* You say in this Province the people do not understand well sinking and that this work had better be undertaken by the Agricultural Department. I do not know how, when wells in this country have been built in India for thousands of years, these people do not understand the principles of masonry? That sounds very extraordinary?—We are a most backward Province.

28679. With reference to the Persian wheel from the Punjab, have you heard that in Gujarat and Bombay Persian wheels of a certain type are very very common? Have you tried them?—I have tried the Punjab Persian wheel which is much better than the Gujarat wheel. I have been to the Poona Show and seen these Persian wheels. Their cost ranges from Rs. 400 to Rs. 600. They are designed for greater depths; the water level seems to be lower in Gujarat and Bombay than in the Punjab.

28680. You are in favour of introducing legislation for the purpose of castrating bulls? Have you tested public opinion to see whether it would be against it?—I do not think that the idea of legislation would be repugnant to them.

28681. Have you had any idea, if castration were to be carried on a very large scale, how much staff would be necessary?—I think the people should be trained in using that implement adopted in this new method of castration. The Veterinary Assistant Surgeon or Deputy Superintendent should not be allowed to carry on that work alone.

28682. The ordinary people you think should be able to use it?—Yes.

28683. *Sir S. M. Chitnavis:* Is your iron plough suitable for *biasi*?—No. We can only take it up in transplanted areas.

28684. And this has been taken up in Chhattisgarh?—No.

28685. *Sir Henry Lawrence:* I think you said that malguzars are prepared to spend any sum of money in the education of their children?—No, whatever they can afford to spend. Everybody aspires to have his children educated according to his means.

28686. Is this an English education that these malguzars give to their children or a vernacular education?—In the beginning it is vernacular, but he cannot make an estimate in the beginning as to how far he can let his son go in his education. He begins with vernacular, then he sends him to the middle English schools and the high schools and ultimately, if he can afford it, to college.

28687. *Sir Ganga Ram:* Does he not then aim at becoming a lawyer?—He does.

28688. *Sir Henry Lawrence:* What do you regard is a reasonable sum to spend for the education of a boy from the beginning until he takes his degree?—There must be some education in English and he must read up to the Matriculation, but I am not in a position to answer that question.

28689. *Sir Ganga Ram:* What is the market value of land?—It is sold in my part at Rs. 100 per acre on tenancy right.

28690. It is tenancy land?—Yes.

28691. What do you mean by tenancy land? Is it not proprietary land?—No.

28692. You buy the tenancy rights for Rs. 100 an acre?—Yes.

28693. Whom does the land belong to?—In some cases to the malguzar.

28694. Did you buy your own land?—Yes, a part of it from the malguzar direct and a part of it from the cultivators.

28695. And your profit, after paying all expenses, is Rs. 200 an acre?—Yes, for sugarcane.

28696. You said that about one-third of your land is cultivated with sugarcane?—Yes; and Rs. 200 an acre is the guaranteed net profit, if improved methods of cultivation are introduced.

28697. After paying all expenses?—Yes.

28698. It is a very good investment, What pension do you get now?—Rs. 42-14-0.

28699. What was the highest pay you were drawing?—Rs. 140.

28700. Why did you not think of taking up agriculture in the earlier days?—Because I did not come to know about it.

28701. As an Agricultural Assistant, did you not know it?—As soon as I knew about it, I did not want to serve.

28702. In what districts have you served?—In Chhattisgarh and for some time at Jubbulpore.

28703. Have you experience of all the districts?—I know the Chhattisgarh Division, the Northern Circle, and Bhandara and Balaghat districts.

28704. Where is your land?—In the Balaghat district.

28705. How can people afford to buy food without money? What is the crop from which you derive a net profit? Is it sugarcane?—Yes. The supply of *gur* is short of the demand here, and it has to be imported from the Bombay Presidency and Madras and the United Provinces.

28706. And cotton?—The Balaghat district is too rainy for cotton, but I had in mind to try the variety of cotton which is grown in Madras by lift irrigation.

28707. You say that food is short of the demand?—I said in respect of *gur* and sugar.

28708. Is it *gur* that is short of the demand, or refined sugar?—There is no supply of sugar.

28709. You import white sugar?—White sugar and *gur*, both; we want white sugar as well as *gur*.

28710. You import *gur*?—Yes, in large quantities.

28711. From where do you import it?—From the United Provinces, the Bombay Presidency and Madras.

28712. You cannot make enough *gur* for your requirements?—No; that is why the profits are higher.

28713. Do you grow wheat for your requirements?—My land is not suited for wheat.

28714. Do the people import other food also?—The cultivators do not import; they grow their own rice; rice is the staple food; they also grow pulses.

28715. They eat something with the rice?—Yes, they eat pulses and they grow their own pulses.

28716. Do they grow enough of pulses?—Yes.

28717. Are there any *pucca* wells in this Province?—The wells for drinking water are *pucca*; irrigation wells are not *pucca*.

28718. They are nowhere *pucca*?—No.

28719. They do not know how to sink a *pucca* well?—No.

28720. Do you not ask the Assistants of the Agricultural Department to import well-sinkers?—I am afraid the Agricultural Department will not be able to help me in that direction.

28721. Why?—Because they have not got a well-sinker.

28722. They can import one from the Punjab?—I discussed the question with the Agricultural Engineer when he paid a visit to my farm. I suggested it to him but he said he was short of funds, and that he could not take up any new work owing to shortage of funds.

28723. There is nowhere a *pucca* well for irrigation?—No.

28724. Has the Persian wheel that you imported got iron buckets?—Yes, all its parts are iron; only the frame is wooden though iron framing can also be imported but it would add to the cost.

28725. The people are quite able to put it in repair, if anything goes wrong with it?—It is only two years since it was installed, it is working all right; no difficulty has arisen so far.

28726. *Sir Thomas Middleton*: You have been serving in most parts of the Province?—I have experience of this Division, Chhattisgarh;; I have also experience of the Balaghat district, and I was in the north o the Province in the Jubbulpore district.

28727. You got your early instruction in agriculture in the Nagpur school?—Yes.

28728. When you had seen the advantage of agriculture in the Province, you made up your mind to go in for farming after you retired?—Yes.

28729. You selected a piece of good land?—Yes.

28730. How much land were you able to get?—35 acres.

28731. You think that there are a number of others in the department who, if they were allowed to take proportionate pension, would use their opportunities of seeing what can be done and acquire land, as you have done, for farming; that is your opinion?—Yes.

28732. How many, do you think, would avail themselves of an offer of that sort if it were made?—I am in touch with ten officers out of whom at least three would agree to retire.

28733. We have another proposal of the same sort. A prominent witness in another Presidency made the suggestion that after agricultural officers had been employed for ten years, they should be dismissed and made to go in for farming. What do you think of a suggestion of that sort?—The activities of those trained men would be hampered for want of money, it would not help them.

28734. You have told us what profits you make in sugarcane. Does the rest of the land pay any profit? You have 10 acres of sugarcane on which you make a profit?—Yes, and 10 acres of rice, 10 acres have to be left fallow for the succeeding crop. Sugarcane cannot be grown continuously.

28735. Is there any net profit from the rice land?—I derive very little profit from it because I am an employer of labour and I have to pay very high rates for labour; in my district the manganese mines are working, and on account of that the wages of labour are high.

28736. How many pairs of bullocks do you require for the 35 acres?—In the busy season, when cane crushing goes on, I keep four pairs, but in the rainy season, I keep two pairs.

28737. You can hire them in the busy season?—I purchase them, as I am near a cattle market; I sell them at a reduced rate when I do not want them.

28738. Do you lose much in selling?—I do not mind that, because the cost of keeping them is higher than the loss I sustain by selling them.

28739. Cane crushing work is very heavy work and the bullocks obviously deteriorate a good deal?—I actually suffer on this account; my bullocks deteriorate on account of the very hard work they have to do.

28740. You have taken that into account in estimating your profits from sugarcane?—That was not the case with *khari* cane.

28741. In what part of the Province do you find the best cattle?—In Berar there are good cattle, but I do not think they are bred there.

28742. Where are they bred?—In some jungly tract which I do not know.

28743. And the worst cattle you find here?—Yes, in this Division.

28744. From your answer, I take it that you have never been in these jungly tracts where they are breeding cattle?—I have been through those tracts in my official capacity.

28745. What class of men breed the cattle? What tribes?—They are professional cattle-breeders.

28746. What do you call them in the Central Provinces? Are they called *rabaris*?—They are called *gowalas*; they are also men who come from Central India and they are called *banjaras* or *naiks*.

28747. Are they usually very skilled and very careful breeders?—They do not carry on that work scientifically.

28748. Is that because fodder is getting scarce?—They have no knowledge as to how that work can be improved.

28749. You mentioned that you use sulphate of ammonia for your sugarcane?—Yes.

28750. And you think that some steps should be taken to prevent adulteration of manure; have you ever found any adulteration in a manure like sulphate of ammonia?—No, I get my supplies from the Government farm, where it is tested. I do not get it direct from the dealers, and I have suggested in my written answers that this procedure should be followed.

28751. How do the cultivators who have not been in touch with the Government farms get sulphate of ammonia, if they use it?—They do not use it for other crops than sugarcane.

28752 Where do the sugarcane cultivators get their supply of sulphate of ammonia from?—The only source for them is the farm depôt; if they use it they must go to the farm and get it.

28753. *Sir Ganga Ram:* What price do you pay for sulphate of ammonia?—Rs. 220 per ton.

28754. And what do you pay for nitrate of soda?—That also is about the same price; I am not quite sure of it.

28755 How many hundredweights do you put on sugarcane?—It is on the basis of nitrogen content; I apply 150 lbs. of nitrogen to my cane crop altogether, out of which 50 lbs. is in the shape of ammonium sulphate and 100 lbs. in the shape of oil-cake; it is on the basis of nitrogen content.

28756. You also use nitrate of soda?—I use ammonium sulphate because in it the unit of nitrogen is available at a cheaper rate than in nitrate of soda.

28757. *Sir Thomas Middleton*. Do you grow any green manure crops on your own land?—I wish I could grow them. When I was at the Poona Show last October, I had information that in Madras they green-manure their fields with leaves of trees. I knew it ten years ago, but I did not know positively which leaves were suitable or were used by them. I met a big landlord of Madras in the Show, and he told me that *karanja* was mostly used by them.

28758. You have not grown it yet?—No

28759. Do you know whether it wants much moisture in the soil?—I had planted *karanja* trees on the Government farm for shade, and I noticed they were quick growing trees.

28760. Do you use *karanja* cake?—It is used for sugarcane.

28761. *Sir Ganga Ram*: Do crops grow under its shade?—When the tree is full grown it is not possible to grow any crops under its shade, but in the beginning it is possible.

28762. *Sir Thomas Middleton*: Does the *karanja* tree want deep soil with plenty of water or will it grow on dry land?—It is growing on the roadsides here everywhere.

28763. *Mr. Wills*: You said that you recommended the postponement of the revenue payments?—Yes.

28764. Is that with a view to benefit the marketing of the crop?—Yes, so that they can have more time to dispose of the crop.

28765. Is it primarily intended for the benefit of the proprietor of the village or the tenants?—The tenants.

28766. Do you not think it is possible that if the date of payment is postponed, the tenant may find difficulty in finding the money to pay?—Now the tenant is so very careful that he will not fail to pay.

28767. On page 103 of your note you suggest that it is not very advisable that the cultivator should handle cash. "Granting of *taccavi* loans on the recommendation of the Agricultural Department for seed, manure and implements is working better as the cultivator does not handle cash." Does not that suggest that you rather distrust the capacity of the cultivator for holding up cash against his requirements?—I do, he is so much pressed at times that he may spend that money in other directions.

28768. You do not think that the postponement of *kist* will help?—He knows that if he does so he will be dispossessed of the land; the value of the land is rising; the land revenue is Rs. 2 or Rs. 3 per acre and in three years it may go up to Rs. 10, and for the sake of Rs. 10 he will not let the land go.

28769. Is it a fact that certain unscrupulous malguzars encourage arrears of rents as much as possible with a view to getting hold of the land?—Yes; but the tenants are very careful now.

MR. RAMCHARAN LAL DUBEY.

28770. But do the malguzars encourage arrears ?—In my village the malguzar is not a moneylender. He has no money to lend out.

28771. You never had any training in the Revenue Department ?—No.

28772. Do you think it would serve any purpose if selected officers of the Agricultural Department had a certain training in the Revenue Department in the earlier years of their service ?—I think officers of the both departments should interchange. Formerly, the Revenue Inspectors were recruited from the agricultural school; that system worked very well and those officers have been very successful; they have risen even to the post of Extra-Assistant Commissioner.

28773. Let me give a concrete suggestion. Supposing the members of the Agricultural Department were deputed to work as Assistant Settlement Officers for two or three years in the earlier period of their service, do you think that would be a useful experience for them ?—You mean they should work as Assistant Settlement Officers to start with without having experience of lower grades as Revenue Inspectors ?

28774. After they have had a certain amount of experience in the Agricultural Department they could be tried; but assuming that could be done you think it would help them in dealing with agricultural problems afterwards ?—Yes; it would.

28775. *The Chairman*: When did you retire from the service ?—I retired only two years ago, but have been working on my farm for the last four years.

28776. Did you retire before the usual period of service ?—There was some defect in my health and as I also wanted to work on my farm I took leave before retirement.

(This concludes the witness's public evidence.)

Mr. PURUSHOTTAM PRASAD PANDEYA, Malguzar, Balpur, Bilaspur District.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—Research affecting the welfare of the agriculturists and veterinary research—both are of importance but they must be carried on with economy. Indian youths from all parts of India should be selected for this work.

QUESTION 2.—AGRICULTURAL EDUCATION.- To induce the masses to take special interest in cultivation, practical knowledge of producing country vegetables should be imparted. Vegetables are scarce in villages and if they are grown properly, they are sure to benefit the cultivators.

Instruction should be given to the agriculturists on social economy, *i.e.*, they may realise that wasteful expenses on social gathering lead to a great extent to their ruin and indebtedness. They may copy the examples of thrifty agricultural classes like the Aghariya caste in the Bilaspur and Sambalpur districts. This caste is noted for its frugality, sobriety and temperate habits.

QUESTION 5.—FINANCE —(*a*) There must be such societies and farms which might advance money and seed to the needy cultivators without interest. The big landlords may be induced to help their brethren by giving them loans on moderate or nominal interest.

(*b*) *Taccavi* is good. But the method of realising it is discouraging and appears to be very hard.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS – (*a*) Poverty and want are the main causes of borrowing. Death or marriage in the family, purchase of cattle, continued illness, failure of crops, house building, these compel a man to borrow money. They fail to repay the loan on account of high interest and owing to scanty income

(*b*) For loans to agriculturists, the rate of interest must be fixed by Government. They might be very low. Yes, measures should be taken to deal with rural insolvency and to apply the Usurious Loans Act. Sometimes villages and holdings are taken by the moneylenders and the original owners' families become paupers. Laws should be made to save the children of such unfortunate malguzars and ryots who borrow money and do not care to repay it. Some agriculturists are addicted to wine, opium, hemp and fall a victim to usurers who lend them money on high interest and deprive them of their landed property, to the ruin of their sons and grandsons The Government should make laws to see that the sons and families of such foolish creatures may not lose their ancestral property, if they manage to pay the actual loans *minus* all interest. Mortgaged landed properties should never lapse to moneylenders and for this laws should be so made.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) If holdings are in one plot and block, the cultivator can do much to increase his income and produce better quality of corn. But with the partition among brethers the fragmentation continues in spite of individual attempts at consolidation of holdings.

(*b*) The ryot class as a rule are against the consolidation of holdings, while the malguzar class favours it. But it is of great good to both the classes.

(*c*) Yes, legislation to save and safeguard the interest of minors and widows is more necessary. Persons legally incapable, do such things as are ruinous to their family and sons. There must be strong restrictions against moneylenders in their way of cheating and entangling needy cultivators. The civil court may be directed always to side with the poor and indebted peasantry where their holdings and villages are concerned.

QUESTION 8.—IRRIGATION.—In the Bilaspur district, especially in the tracts transferred from the Sambalpur district, tanks are the only source of irrigation. These tanks are very very old water reservoirs and they were dug out not by the State or the old Rajas but by the malguzars and charitably disposed persons for supply of drinking water and for irrigation. In Government villages and in *khalsa* areas, no great trouble

is experienced for getting permission to improve or enlarge old tanks or to make new tanks by ryots and malguzars. The Deputy Commissioner shows enough sympathy and commonsense in sanctioning such applications. But in villages which are under a superior proprietor or talukdar, it is very difficult to obtain his consent and permission The superior proprietor or talukdar will not give his consent unless his demands are fulfilled. He is himself unable to improve or construct such tanks, but he will not permit others to do so unless he is paid a heavy sum as a private present. He does raise objections to the granting of *sanad* or certificate for improvements effected by the ryot or inferior proprietor or the malguzar. All such restrictions should be removed and the makers of tanks for irrigation should be given every possible encouragement by the Government and the talukdars be instructed to be reasonable and just.

QUESTION 15.—VETERINARY.—The agriculturists are learning to make use of the veterinary dispensaries but they are far removed from the villages. It is beyond the power of villagers to go there or to get assistance just in time. The travelling dispensaries also cannot be of service to the villagers as the stock of medicines they keep is always not enough. With every *Patwari* there ought to be a small stock of medicines to serve in time. The agriculturists might easily get to the *Patwaris* and can bring medicine. *Patwaris* may be taught easy lessons on "cattle diseases and their treatment" and there must be an easy literature to help the lettered people. Medicines are not found in ordinary shops and the stock of medicines in noted centres is necessary. Information reaches the veterinary dispensaries too late and the doctor sometimes visits a village after the disease has subsided after killing numbers of cattle. The doctors consider it as a burden to visit out-of-the-way places and sometimes their treatment of the people is very harsh The majority of the agriculturists are too poor to spend anything on treatment of cattle without the help of moneylenders or their rich brethren. Instead of appointing a superior Veterinary Officer the strength of doctors and subordinate officers should be increased in every district and they should be sent in large numbers to villages affected with contagious diseases.

QUESTION 16—ANIMAL HUSBANDRY.—"The cow is the mother of prosperity" is a well known proverb and it contains in it the greatest truth. India is a land of *Gopal* the cow-worshipper's God. It was a mine of milk, curd, pure *ghi* and butter. But now there is a famine of unadulterated milk or *ghi* even for medicine. The result is that Indian people are getting weaker and weaker and early death and disease are the results. Even in villages, the infants do not get milk in ordinary quantity and the milk of their own mothers is inadequate to nurse them properly The number of cows is decreasing every year. Under the circumstances, breeding farms and dairy farms must be opened for every group of 40 or 50 villages all over India. The capitalists should be induced to finance and support such farms. This is as imperative as the education of the children. The cows may be of pure Indian breeds. Government ought to take a leading part in breeding and dairy farming as cows and milk are the very life and light of agriculture and agriculturists

Every attempt should be made to reserve pasture lands for the grazing of cattle Grass as a crop should be grown for the purpose of grazing, because the cattle do not get proper amount of food. They are ill-fed and so become lean and thin. The pastures kept in villages do not now yield good grass and herbs. They have lost their power of producing grass Every effort should be made to make them more fertile.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) In the Central Provinces districts, where rice is the main crop, an average cultivator spends upon his holding at least 8 months. In the slack season, cultivators do nothing at all or run to factories like the Tata Iron Works, Kalimati, simply to sacrifice their lives for a dearly bought gain. They return home diseased and in broken health and spread many epidemics like cholera and small-pox. If they can manage to spin at home, their lives can be made happier and they can do good to the country by supplying hand-spun yarn for which there seems to be a great demand.

(*b*) *Chakra* or *charka* spinning is the simplest and most important home industry. But the difficulty is that the people do not get cotton in sufficient quantity, to keep their *charkas* going for months. If every village can produce cotton so as to keep the empty hands using *charka* for 2 or 3 months, for the rest of the year cotton from bazar or from Government stores opened for the purpose can be obtained. Every hand can thus earn at home two to three annas per day. *Charka* is an unfailing

helper for the poor. The castes which grow cotton and take to *charka* are much better off than those which do not grow and use it. The Aghariya caste of Bilaspur and Sambalpur districts may be mentioned here.

(*c*) Bee-keeping, rope-making, and lac culture are also good, if they can be introduced successfully and can be managed by *local men* (competent men found in the locality where they are started, and not by outsiders or non-local men)

(*d*) Yes, there must be such factories in every tract. But they must be controlled by co-operative banks.

(*h*) Learning and capital are the two main things which can open the eyes of the people sunk in ignorance and misery. Every human being wants to live a happy and healthy life, wants to see that his house, his village and his motherland should be free from diseases and ailments. But he has no means to improve his own environment. Prejudice and old practices also prevent him from making any reforms. It should be the duty of the Government to see that the masses get enlightenment and good employment to make their lives happy and healthy. Every encouragement must be given to *ayurvedic* and *unani vaidyas* and *hakims* to serve the people in time of need and they should be financed to keep useful and necessary drugs for free distribution to the needy poor. Tanks or wells should be dug up by the villagers for drinking purposes in places where they are wanted. Pits, watery and damp places near the village site should be filled up and improved.

QUESTION 20.—MARKETING.—No; there are great defects in the market facilities. I refer to the rice market which is the most important of all. The simple village people who produce corn and go to sell rice to the Marwaris or other *mahajans* do not get the proper and exact return of their goods. The Marwaris profit in the dealing and the village people suffer in every respect. The mode of measuring is unfair and deceitful. The purchasers or the Marwaris are the masters of the village bazars The rate of rice in a market-centre is 8 seers per rupee while it is selling 6 seers per rupee in Nagpur or Bombay. The Marwaris refuse to purchase rice in a bazar if the sellers do not offer them 10 seers or 12 seers per rupee The sellers have brought rice from 10, 12 or 15 miles and they would be unwilling to take back the heavy loads on their shoulders or heads. They are compelled to yield to the wishes of the Marwaris even at great losses. To save the villagers from such loss, the rate of the main produce in every important railway centre must be made known publicly to the people on the morning of the bazar day through the agency of village watchmen or police or *patwaris* and every step should be taken to see that no unfair modes are adopted in measuring. In case the Marwaris are not willing to purchase rice or wheat according to the rate fixed in noted centres, the whole stock may be deposited with or purchased by an agent appointed by, or representatives of, such bodies of experts as the Agricultural District Association. One of their main duties should be to see that the village produce is sold at the highest rate and the producers and not the Marwari middlemen get the profit which is due to the producer or village people. In this connection, I may mention that societies should be formed to safeguard the interest of the village people who sell their main agricultural produce in village bazars or in railway station market centres. There should be purchase societies and societies for the sale of produce or stock.

QUESTION 22.—CO-OPERATION.—Co operation in its true sense is not met with in practice. The officials who engineer and run this department fail to realise that they are for the happiness and betterment of the masses or their members. They more or less adopt the method of a greedy *bania* to accumulate capital It seems to be more a business concern than an encouraging, helping and patriotic institution. The result is that many agriculturists who deal with it go dissatisfied and the result is that their fellowmen get too discouraged to join the society. The societies formed for sale of produce, cattle-breeding, joint farming and purchase societies can become boons to the masses if they are conducted in the spirit of real co-operation and patriotism. Consolidation of holdings is of great benefit to the majority of agriculturists. It will help them in improving their land and in freeing them from litigation.

QUESTION 23.—GENERAL EDUCATION.—(*a*) The present system of education does not help the agriculturists in any way in bettering their material condition. The high school and college students hanker after service and those who have landed property never care to improve it nor do they take pains to visit and inspect the work of agriculture in their own fields. They are too weak and tender to withstand the hardships of an agriculturist's life. Even the boys who attend primary schools for a period of 4 or 5 years begin to hate their fathers' vocation of tilling the ground and doing "forced and free" labour as is prevalent in many parts of India. The system working at present does not create a taste in the majority of students for

manual labour and hard agricultural work. This work is left entirely to farm servants who are unlettered like the very plough cattle which drive the ploughs. Indian students and graduates return to agriculture when all other efforts to get employment have proved fruitless. And even if they take to agriculture, they can never become better or typical fieldmen.

Agriculture must form one of the compulsory subjects in colleges, high schools, middle schools and primary schools. In village schools, a great deal of practical work of agriculture should be done.

(*b*) (i) Night schools may be opened in some villages as a test and the students there be made to read certain good moral poems and songs and prayers and to write ordinary letters. Other subjects may be taught orally to improve their general knowledge of the world. They may be allowed to do all the household work during the day. The course may be for two years only.

(ii) Compulsory education in rural areas will have to meet with great apathy People consider it as a trouble. But education must be made attractive to the children by introducing spinning, care of cattle, gardening, carpentry, etc.

(iii) Such boys lapse into complete illiteracy within three or four years. But for Tulsi Das's immortal work "The Ramayan" their four years' labours over the "the three R's" would have been fruitless. Travelling libraries of light literature ought to be introduced to keep up the learning of such boys.

Oral Evidence (through an interpreter).

28777. *The Chairman*: Mr. Purushottam Prasad Pandeya, you have provided the Commission with a note of evidence which you desire to put before us. Do you wish to make any statement at this stage?—I will reply to whatever questions are asked.

28778. Is it your experience that there is a good demand for country vegetables which you mention as a possible source of a new cultivation?—There is a demand.

28779. Where does the demand exist?—In every village.

28780. For consumption in the village?—Yes

28781. Do you yourself cultivate any land?—Yes.

28782. How much?—200 acres.

28783. What are your principal crops?—Rice.

28784. Any sugar?—Very little.

28785 Are your lands irrigated?—Very little, from village tanks.

28786. Is it your view that there is room for an extension of irrigation?—Yes.

28787. From what source?—From big tanks as they were constructed in 1899.

28788. Are there any streams in your neighbourhood which could be dammed for storage?—No.

28789. Do you lend money?—No.

28790. Are you satisfied with the veterinary service in your district?—I get very little help; it is at a distance.

28791. Are you a member of your District Council?—I am a member of the Local Board.

28792. Does your Local Board control certain veterinary officers?—Yes

28793. Do you think that a good arrangement?—The management is all right but as they are far off from the interior they cannot come in time to the villages where they are required.

28794. How far from your holding is the nearest Veterinary Assistant?—90 miles

28795. Is your District Board sufficiently in funds to carry out the maintenance of the roads in its charge?—No.

28796. What is the principal demand from the public for better roads or for better education, or what?—First education, next roads.

28797. Is there a growing demand for education on the part of the cultivator proper?—There is no real demand but the demand should be created.

28798. On what do you found yourself when on page 126 you express the view that the number of cows is decreasing?—They are not looked after properly; there is a dearth of fodder.

28799. I do not think you understand my question. What makes you think that the number of cows is decreasing at this moment?—It is my own experience that in the neighbouring villages the cultivators who had more cows have now less cows.

28800. *The Raja of Parlakimedi*: What is the reason for the decrease; is it because the cultivators are encroaching upon the pasture land?—No; they do not take proper care of the animals and there is a dearth of fodder. There is some encroachment, and, secondly, those areas which are allotted for the grazing of cattle do not grow good grass.

28801. *The Chairman*: What is the season of fodder shortage in your district?—In the hot season and in the rainy season.

28802. Is there any natural grazing available at those periods?—There is no forest for grazing.

28803. But even if there were grazing available, is it not the case that at certain seasons of the year there would be no grass?—Yes.

28804. So that increased pasturage is not a complete solution of this problem?—Unless there is good grass in the area it will not help.

28805. Is any attempt made to preserve fodder in the flush season against shortage in the dry season?—There is not enough grass for that season, so that we cannot cut and preserve it.

28806. You have mentioned the possibility of introducing lac culture, rope-making and bee-keeping, and you think that it might be an advantage if those industries could be introduced successfully and could be managed by local men. Would you object to their being started by help from outside?—If these industries are started from outside, then the labourers will get employment in those industries but all the profit will go to outsiders, which is not a sound policy. If local capital be used, the profits will go to local shareholders who will have more sympathy with their labourers.

28807 In dealing with the question of co-operation, you complain that societies are managed more in the spirit of the "greedy *bania*" than in one of helpfulness towards the cultivators Would you give us an instance of what it is you complain of?—Those who are more connected with borrowing should be members of their societies, so that they should have more sympathy with the borrowers.

28808. Have you knowledge of any society in particular?—I do not know, but I think it is possible. In Janjgir, the tahsil headquarters, they have started it.

28809. Have you sufficient grounds upon which to make the rather serious charge that societies are managed in the spirit of the 'greedy *bania*"?—I have no proof.

28810. *Sir Ganga Ram*: Are you a Brahmin?—Yes.

28811. Have you all your life been a cultivator, or been living on cultivation?—I have never done anything

28812. Have you any sons or relations engaged in cultivation or are they pursuing some other occupations such as law?—We have got a joint family and all the members are engaged in cultivation.

28813 *Sir Thomas Middleton*: With reference to the enlarging of these village tanks, you complain of the action of talukdars who insist on having a present before the tanks are enlarged. Could there be any possible harm done to the talukdar by the enlarging of the tank or is this purely blackmail?—The talukdar does not suffer anything thereby, but his consent is simply required and for that he expects some money.

28814. Then again complaint is made of the action of the veterinary officer who sometimes treats the people harshly when he is called to out-of-the-way places. Does the veterinary officer get any fee for his attendance?—He does not charge any fees.

28815. Does he, like the talukdar, expect a present?—No.

28816. You quote a proverb "The cow is the mother of prosperity." Would you agree with me if I changed the proverb to "The well-fed cow is the mother of prosperity"?—Yes.

28817. Do people feed their cows properly in your district?—No.

28818. You say India is the land of cow-worshippers; yet your neighbours do not feed their cows? As a man of influence in your district, cannot you induce your tenants to feed their cows?—I do to a certain extent.

28819. How many cows have you yourself got?—About 40 or 50.

28820. In what season do these cows calve generally?—In December and January.

28821. And when do they go dry?—After 6 or 7 months.

28822. How are these cows fed during the months when they are dry?—On rice straw.

28823. No grain at all?—When they are in milk they get grain.

28824. I am afraid you are not a cow-worshipper: you feed them when they are giving milk but when they are dry you give them nothing but *bhusa*?—Yes.

28825. *Dr. Hyder*: To what is this deterioration of the cattle due? Their breed is deteriorating, their yield is deteriorating. What are the causes of this deterioration?—Insufficiency of fodder and good food.

28826. Would you like to have the rule of *damdopat* applied here?—What is that?

28827. It is a rule of Hindu law that in no case should the debtor be forced to pay more than twice the original principal lent?—I am not in favour of that for all cases, but only in the case of poor tenants.

28828. Would you like to have the Usurious Loans Act applied here?—Yes.

28829. *Sir Ganga Ram*: What is the total area of your land?—600 acres.

28830. And what land revenue do you pay?—Rs. 432.

28831. *The Raja of Parlakimedi*: You suggest on the first page of your note that the growing of vegetables should be encouraged? Is it your view that it should be a bye-industry?—Yes.

28832. You complain about the zamindars not maintaining irrigation sources in proper condition. Is it not possible for the ryots to go to Government for the redress of their grievances?—There are so many tanks that it is not possible for them to repair them.

28833. I am afraid you did not understand me. In my part of the country, if the zamindar fails to maintain the irrigation sources in proper condition, the ryots can apply to the Collector to get them repaired to the extent necessary, and after that the amount is collected from the zamindar as part of the Government dues. Is not that facility prevalent in these parts?—There is no system like that here.

28834. *Sir S. M Chitnavis*: Is there no mention made about repairs in the record of rights?—According to the record of rights, the ryots are authorised to make an improvement in the village tanks, but the zamindar claims that his consent should be taken before any improvement is made.

28835. *The Raja of Parlakimedi*: When he fails to comply with such a request what steps can the ryots take when it is necessary to irrigate their fields?—They are not prevented from making use of the water, but if they want to improve the supply the zamindar comes in the way unless his consent is taken beforehand.

28836. You suggest that the moneylender should not have a hold upon the land that is to say, he should not be able to proceed against the land to recover his dues. Is it your view that the Impartible Estates Act, which we have in operation in Madras, should be extended to this Province? In Madras there are permanently settled estates which the owners cannot mortgage for borrowing money. Do you want that sort of system to be extended here?—I would like to have it here.

28837. Should it be extended in every case, or would you limit it to people having a certain amount of property?—It should be extended with some limitation.

(The witness withdrew.)

MR. PURUSHOTTAM PRASAD PANDEYA.

COL. H. de L. POLLARD-LOWSLEY, C.M.G., C.I.E., D.S.O., Chief Engineer, Irrigation, Central Provinces.

Note on Irrigation.

Irrigation in the Central Provinces is required mainly in order to ensure a satisfactory outturn from the rice crop. It is also used for cane and garden crops and to a comparatively small extent for *rabi* crops such as wheat, gram and barley.

So far as Government irrigation works are concerned, except in the case of two small works in the Shahgarh tract of the Sauger district, they are now designed solely for the irrigation of rice and, though small areas of other crops are irrigated from certain of these works, it is contemplated generally that the irrigation of these other crops will cease as the extent of the rice area irrigated develops up to the full capacity of the works. In a few cases, where it is known that it will never be possible to use the full capacity of a work for the irrigation of rice the irrigation of other crops will be continued.

2. The statement below indicates the extent to which rice is grown and irrigated in the more important rice growing districts in the Province:—

Division.	District.	Mean monsoon rice rainfall.	Total area of rice grown in 1924-25.	Area of rice irrigated by private works in 1924-25.	Area of rice irrigated by Government works in 1924-25.	Total area of rice irrigated in 1924-25.	Approximate area of rice that it is contemplated will eventually be irrigated by Government works that are completed or under construction.	Percentage column 5 of column 4.	Percentage column 8 of column 4.	Percentage of rice area that will be irrigated both by Government and private works when the Government works now under construction are completed.
1	2	3	4	5	6	7	8	9	10	11
Chhattisgarh.	Raipur ...	46·81	1,532,441	47,672	157,476	205,148	269,289	3·1	17·5	20·6
	Bilaspur	44·26	1,194,141	10,504	2,120	12,624	169,115	0·88	14·1	14·98
	Drug	43·64	698,653	18,903	125,752	144,655	173,235	2·7	21·8	27·5
Nagpur.	Bhandara.	49·09	454,804	165,334	35,206	200,540	42,750	36·3	9·4	45·7
	Balaghat.	60·03	380,193	58,333	83,695	142,028	103,860	15·3	27·3	42·6
	Chanda	45·83	256,447	111,919	22,965	134,884	56,500	43·6	21·0	65·6
Jubbulpore.	Jubbulpore	52·71	183,575	...	7,785	7,785	55,285	..	3·01	30·1
	Seoni	48·20	110,318	22,406	2,794	25,200	14,460	20·3	13·1	33·4
	Damoh ...	45·42	63,186	...	4,457	4,457	15,857	...	25·0	25·0

The districts are placed in the order of their importance as rice-growing districts. The Chhattisgarh Civil Division stands easily first in respect of the total area of rice. The figures in column 9 show, however, that private irrigation barely exists in that Division. Compared with the Nagpur Division, the rainfall is somewhat low and the necessity for Government irrigation is greater in the Chhattisgarh Division

COL. H. de L. POLLARD-LOWSLEY.

than in any other part of the Province. It is, however, in the Nagpur Division that the best rice is grown and most of it is transplanted, while in Chhattisgarh, though efforts have been made to introduce transplantation, practically no success has been achieved. No success can indeed be expected until holdings have been consolidated, and even when this has been done development will be obtained only gradually, for the population is somewhat sparse and the cultivators are lazy and unenterprising.

Private irrigation can hardly be said to exist outside the Nagpur Division and the Seoni district of the Jubbulpore Division where the conditions approximate to those of the Nagpur Division.

3. The figures in the statement in paragraph 2 show that when the Government works now under construction are completed and fully developed, the percentage of the area of rice irrigated will be highest in the districts of the Nagpur Division, as it is at present. In the Chhattisgarh Division, where irrigation is most wanted to secure the rice crop, a considerable advance will have been made, but in all these districts of the Division the percentage of the area of rice irrigated will be considerably below that of the districts of the Nagpur Division. On these figures there is a strong case for the construction of further Government works in Chhattisgarh and especially in the Bilaspur district, where the construction of large irrigation works was commenced only in 1920 and no large works have yet come into operation. Four small works, which were constructed in the district, have all developed satisfactorily.

There is no doubt that more works are required in the Raipur district but pending the satisfactory development of irrigation from the Mahanadi Canal, it is not possible to justify their construction. In Drug also further new works are required, but it is desirable to deter making definite proposals for such works until the present period of the agreements on the Tandula Canal has expired and experience is gained of the readiness with which agreements are renewed. Incidentally it may be mentioned that the Tandula Canal and its distributaries are being remodelled and this work will occupy most of the local labour that is available during the next few years.

In the Nagpur Division, experience has shown that where water is made available all the dry rice and much of the wet rice that is commanded readily enter into agreements. Local officers anticipate when the present period of agreement expires, that these agreements will generally be renewed without delay. But expansion of the rice area has been slow, especially in the Chanda district, owing to shortage of population. There is, I consider, a good case for the construction of new works both in Bhandara and Balaghat, but not in Chanda where no new works should be undertaken until satisfactory development is secured under those already completed. This development can be secured quickly only by colonisation, a matter which is under consideration.

In the districts of Jubbulpore and Damoh, though moderate success has been achieved in the development of certain works, it cannot be said generally that the irrigation of rice is appreciated. Much of the soil in the area where rice is grown is light and, without manure, it is found that it becomes exhausted and that after a time the irrigated crops are not appreciably better than the unirrigated crops. There is no transplantation in these districts, but *machowa* is practised Until the manure question has been solved, I do not recommend the construction of further works in the Jubbulpore and Damoh districts.

In the Seoni district two Government works only have been constructed, one of which only came into operation this year. The conditions of rainfall were such that very little irrigation was necessary and no agreements were obtained under this work. Until further experience has been gained of the extent to which cultivators will use Government irrigation in this district, it would not be advisable to start any new works, but the conditions being approximately the same as in the neighbouring district of Balaghat, where Government irrigation is appreciated and freely taken, there seems to be little doubt that the same results will be obtained in Seoni. If this is found to be so, I consider that further Government works should be constructed in this district.

4. I consider then that new irrigation schemes should be constructed in the following districts:—

(1) Bilaspur.	(4) Bhandara.
(2) Drug.	(5) Balaghat.
(3) Raipur.	(6) Seoni.

In Bhandara and Balaghat, there is no necessity to delay the construction of new works. In Bilaspur, it is undesirable to start any new work for two or three years

when the construction of the Maniari project will have been further advanced. By that time too some information will be available in regard to development under the Kharung Reservoir, and the position under the Mahanadi Canal in the adjoining district of Raipur should be more clear than it is at spresent. In the other districts, it must be shown that, under the schemes that have already been constructed, the results are such as to justify the construction of new works before any new works are undertaken. It is impossible to say with certainty how long it will be before a definite decision can be made, for the readiness of the cultivators to enter into agreements depends almost entirely on the extent to which the rainfall fails, and this cannot be forecasted Seeing that the last three years have been years of good rainfall, it is not unreasonable to expect a bad year before long and there is little doubt that, on the occurrence of a bad year, agreements will be secured on a large scale and this will justify the construction of new works.

5. The main obstacles to the extension of Government irrigation in the Province are—

(*a*) The high cost of works due to the necessity of providing storage and the difficult nature of the country that has to be traversed by the canals.

(*b*) The uncertainty of income due to the variations in rainfall which are such that, though irrigation is frequently necessary for the production of a reasonably good crop, there are years in which a fair crop can be obtained without irrigation. The cultivator is not unnaturally averse to paying for water when he may not require it. The agreement system has been introduced to meet this difficulty and to a large extent it has met it, but at present delay must be expected in obtaining renewals of agreements if, in the year in which they expire, the rainfall is favourable. This adversely affects the income from works.

(*c*) The high cost of maintenance due to the fact that irrigation is confined almost entirely to the *kharif* season and there is practically no irrigation in the *rabi* season. Works are also scattered over large areas and inspection is difficult.

(*d*) The difficulty of obtaining watercourses. It appears that, unless watercourses are constructed by Government at their own expense, they will never be made on any reasonable scale.

(*e*) The inefficiency of the cultivators, especially in Chhattisgarh. If a higher class of cultivation could be secured and if transplanted rice could be introduced largely to replace broadcasted rice, the cultivators would secure higher profits and a higher rate might be charged. Further, with more efficient cultivation, less water would be used, a higher duty could be adopted and, in many cases, a larger area of irrigation could be effected. As already stated, it cannot be expected that transplantation will be introduced on any scale in Chhattisgarh until holdings have been consolidated and, though this matter is being taken up, it will be some years before consolidation can be effected. Irrigation is far more popular and satisfactory in the more advanced rice tracts of Balaghat and Bhandara than in the more backward areas of Chhattisgarh. Thus under the Wainganga Canal in Balaghat, with one exception, every village that is commanded has entered into an agreement and it is expected that most of these agreements will be renewed readily when they expire In Chhattisgarh, though satisfactory results have been secured under the Tandula Canal in the Drug district, the results under the Mahanadi Canal are not nearly so satisfactory and considerable delay has occurred in the renewal of most of the agreements that have expired.

(*f*) Shortage of manure. In light soil areas in the north of the Province and in the Chhattisgarh Division, the shortage is most serious and has a most detrimental effect on development. In some cases, cultivators may refuse to renew agreements owing to their not being satisfied with the outturn of their crops.

(*g*) The case for the construction of irrigation schemes as protective works is not so strong now as when the policy of constructing these works was first introduced. The cultivators are now better able to withstand the effects of a year of bad rainfall than was the case 20—30 years ago.

Oral Evidence.

28838. *The Chairman*: Col. Pollard-Lowsley, you are Chief Engineer for Irrigation in the Central Provinces?—Yes.

28839 You have given the Commission a note of the evidence which you wish to set before us. Do you want to supplement it by any statement at this stage?—No.

28840. Would you, at the outset, tell us what your staff consists of?—We have three circles, each in charge of a Superintending Engineer, and each of these circles has three divisions; the divisions have generally from three to four sub-divisions, and the sub-divisions are divided into sections.

28841. You have provided us with various documents that have been put before the Commission with an account of the existing schemes. What do you say about the efficiency of the existing schemes?—On the whole, I think they are efficient, that is to say, they can do, on the whole, pretty well what they were intended to do. Of course, some of them do not do what they were intended to do, because we did not know enough about the extent to which water was required when they were investigated. I have given you a figure of 900,000 acres as the area of irrigation that is likely to be done by these schemes when they are fully developed, but I should think that if one went into the details and omitted the area of wheat irrigation which was at one time proposed, one would probably find that the schemes were originally designed to do perhaps 1,100,000 or 1,200,000 acres, or something of that kind; that is to say, they are not as efficient as was originally expected, they cannot do the area they were originally intended to do, but they can do a very fair proportion of it.

28842. When these schemes were devised, was it assumed that the crop systems in vogue before the schemes came in would be persisted in by the cultivator?—Yes, I should say generally it was assumed that there would be no change, though there would be an expansion of the rice area, we did not expect any general change.

28843. The local scheme here, the canal which I see traversing the country-side, is part of the Mahanadi system?—Yes.

28844. Is the main canal there capable of carrying all the water which the cultivators would be prepared to take for rice cultivation?—It will carry a great deal more than they are at present prepared to take.

28845. Was it one idea of the schemes to encourage the growing of wheat?—Originally it was.

28846. Has that mission been fulfilled?—No, it has fallen through entirely; we do not expect any wheat irrigation worth mentioning.

28847. How comes it that that particular object has failed?—We do not expect any wheat irrigation anywhere in the Central Provinces. We now know that in the Central Provinces, except in the Shahgarh tract, which I have mentioned, and to some extent in Jubbulpore, we shall not get wheat irrigation as a general rule. Occasionally, when we get a bad season and there is a small amount of rain in the cold weather, we get a small area of wheat irrigation, but it is negligible.

28848. If you were to start the Mahanadi scheme again with a clean book, would you make the main canal of the same size?—I should not make it any bigger, because with the supplies available, it would not be advisable to make it any bigger. I should probably make it very much the same size, but I might not make it to command such an extended area as it does, because we cannot irrigate the whole of the rice in the area commanded.

28849. Is it your policy to irrigate as much as possible, or to have water in reserve in order to be able to save as much as possible?—Our policy is to irrigate to the full extent of each scheme. We do not hold up the water, that is, we do not calculate on holding up the water from one year to another. That, you will find the Irrigation Commission said, was wasteful and should not be done and we never count upon it.

28850. Are all these schemes, in the technical sense, protective or productive?—There were only three schemes sanctioned as productive, but so far as I can see none will be productive. They used to be called protective, but they are now called unproductive.

28851. What are the three productive schemes?—The Mahanadi Canal, the Wainganga Canal, and a tank called the Asola-Mendha Tank in Chanda. Two of them have been relegated to the unproductive list; the Mahanadi scheme has just been relegated to the unproductive list, and the Asola-Mendha Tank was relegated to that list some years ago. We still have the Wainganga scheme on the productive list, but we are sending up a completion report now and I expect it will also be relegated to the unproductive list, in fact it must be.

28852. *Prof. Gangulee*: What is your partly protective system?—We do not guarantee to give the people all the water they want in the worst year that can possibly occur The Irrigation Commission said that it was inadvisable to do that; they did not recommend it. The works were started with that idea, but we soon found out that financially it was impossible; in other ways also it is undesirable, because it involves holding up water in ordinary years in order to save crops perhaps once in thirty years, which we should not be able to do if we used the water ordinarily for a larger area.

28853. *The Chairman*: You have given an account of the schemes that have been formulated?—Yes.

28854. Are they productive in nature?—No.

28855. All unproductive?—Yes.

28856. So that, you have here no productive scheme?—We have no productive schemes. I think in this Province it is practically impossible that we should construct schemes that can be classed as productive.

28857. Is that because of the difficulty and expense of storage in relation to the land commanded by the water available?—It is partly that, and partly it is due to the fact that the demand for irrigation is not such that we can charge the rates which can be charged in a country where the demand is constant.

28858. So that it is a much more difficult problem than in the Punjab?—It is in my opinion much more difficult than in any other part of India.

28859. On the question of minor irrigation schemes, by which I mean the damming of small streams, the construction of small tanks, and the digging of wells, levelling and so on, does all that come within your responsibility?—We have put up a good many small tanks of under 50 million c. ft. capacity, but we have done nothing on wells. We have assisted the cultivators to a certain extent in improving their tanks and we have done work on field embankments on a small scale.

28860. Have you any subordinates on this work whole-time?—No.

28861. Do you think it might be well to have them?—No, I do not think so; I think it is more a job for the people to do themselves. If they want advice and assistance with regard to the investigation of anything of the kind we can do it for them.

28862. Do not these matters require a certain amount of pushing in a country of this sort?—A great deal.

28863. Who do you suggest should provide that?—The revenue officers. The Deputy Commissioner has far more influence with the cultivators than we have, and I think he could push that better than we can.

28864. You do not suggest the creation of a small whole-time staff to investigate and demonstrate?—We found that it was not satisfactory when we took up the improvement of small tanks. Good progress cannot be secured unless the owner of the work takes an interest in it.

28865. So much with regard to your views on the administrative side. What about your opinion as to the scope for the creation of these minor works? Do you think there is much field for them?—When we were investigating the grants-in-aid tanks we looked into it. I was then in the Nagpur Division, dealing with the Bhandara and Balaghat districts and we found it extremely difficult to find works which were worth while taking up. We wanted works of a certain size. There was difficulty in finding works of 10 million c. ft. capacity or thereabouts; but if we want much smaller works, say, 1 or 2 million c.ft. capacity, they can be found.

28866. Is it your opinion that from the cultivator's point of view there is much opportunity for either the individual cultivator or for groups of cultivators to undertake these works on their own behalf? I think there is much scope for work on that basis?—It is difficult to say; but I should imagine there is good deal of scope for it in the rice areas.

28867. Is it your opinion that there has been an exhaustive enquiry into the possibility of it?—There has not been a methodical survey. There has been a certain amount of investigation in connection with famine relief works but that was done a very long time ago and I do not know much about it.

28868. It is for that purpose that I suggested to you that you might set up a small whole-time staff for that type of work. If such staff were to be set up, do you think it suitable that your department should have surveillance over it?—Yes; as far as investigation goes I think we should do it.

28869. Now to turn to another aspect of the same question, do you think there has been a sufficient survey in this Province with a view to discovering what subsoil water may be available for digging wells?—As far as I know there has been no extensive survey, but it is well known that in the Central Provinces the water level is low and I cannot say that one is going to do much on wells

28870. Are you satisfied yourself that your own information is sufficiently well founded to justify you in laying aside the possibility of developing well irrigation in certain areas? Or would you like to have a further survey?—I do not think further survey is necessary; I think the only place where wells can reasonably be adopted is in the beds of rivers.

28871. We heard to-day from a witness that he had found water at less than 20 feet and was getting very satisfactory results out of a bullock lift, so that, in that district at least, there appears to be available a supply of water sufficiently near the surface?—That is perhaps in a river bed, that is the sort of area where we get shallow wells.

28872. Limiting the problem to the areas close to river beds, do you not think that your department should be in a position to give advice to cultivators, and possibly technical assistance in digging wells?—It is a very simple thing. I do not think assistance is required for digging wells in river beds.

28873. The witness in question had apparently a great deal of trouble with his well; he found it necessary to re-dig it apparently every season?—It is possibly because it was in a river bed.

28874. Have you any staff available to give advice in the construction of *pucca* wells?—We have no staff for the purpose, but if we found it necessary we could always engage temporary staff.

28875. What about your touch with the Agricultural Department; are you satisfied with it?—Quite.

28876. Do you often meet the Director of Agriculture?—Not in conferences; we meet frequently otherwise.

28877. Irrigation schemes have their agricultural aspect, have they not?—Yes. In fact we are up against big agricultural problems; that is one of the main troubles in the Mahanadi area

28878. Would you develop that idea a little?—The type of agricultural labourer is very poor and the type of agriculture is equally poor; they do not grow transplanted rice and they cannot be expected to grow transplanted rice until they are in a position to do so; they cannot do it until they consolidate their holdings. They burn all their manure; they grow light rice and many of them have large areas in which they do not personally take any interest. The whole position is most unsatisfactory; it is very difficult to make irrigation successful in this part of the world.

28879. Do you mean to say that these conditions taken together mean that the cultivators are not in a position to take advantage of water?—Exactly, yes; they do not get sufficient profit out of their land to pay an adequate rate.

COL. H. de L. POLLARD-LOWSLEY.

28880. Now on this problem of the method of charging (the amount of the charge is beyond our terms of reference), have you found this contract method satisfactory ?—I think it is the only possible method ; I cannot see any alternative.

28881. Are you familiar with the method employed in certain productive schemes in certain parts of India according to which the charge is attached not to the crop but to the land itself ?—Yes; they have it in Madras too.

28882. What do you think of that scheme?—I think it is inappropriate in a place like this. It involves the compulsory levy of irrigation rates, and I think that would be most unpopular. It is unfair to levy a compulsory rate when you do not give a guaranteed supply. I take it, in their case, they do give practically a guaranteed supply, but we cannot.

28883. Would you agree that there are many problems connected with irrigation, and agriculture under irrigation, which still require to be solved ?—Innumerable problems, yes.

28884. Would you like to see, under the Government of India, an irrigation research station established which might deal with the more fundamental of these problems? - I dare say it would be useful; but I think really it is a matter that one has to deal with very much more locally. The problems here are local problems, and I do not think you can call them all-India problems, and if we leave them to an all-India organisation I think we are liable to be overlooked. I would rather leave them to local organisations.

28885. You do not think that problems of wastage, problems of water-logging, problems of alkaline land and other basic problems of that sort, could be dealt with by such an organisation?—But we are not concerned with most of those, we are not concerned with alkaline land, nor with water-logging.

28886. What are your problems here?—The main problem is improvement of the cultivation. Where we have got good cultivation we have no difficulty; we use our schemes to the full extent; but where we have bad cultivation we have difficulty; we have got to improve the agriculture before we develop our schemes.

28887. Are you satisfied that there has been no deterioration of the land irrigated?—In certain cases there has been deterioration.

28888. How do you account for it?—People apply water and do not apply manure and they cannot expect improved crops.

28889. Are you satisfied that the manurial problems of irrigated land are understood?—They are not solved; I do not know whether they are understood.

28890. Do you agree that that is a field in which a central research organisation might be useful?—Very likely.

28891. Would you give us, in a rather more detailed manner than you have provided in your notes, an account of the contract system in vogue in the Province?—Under what we call the agreement system the occupiers of 80 per cent (this system is practically only applied to rice cultivation) of the rice area in the village which is commanded by an irrigation scheme have to enter into an agreement before that agreement can be made binding. If we get the occupiers of 80 per cent of the area to agree, then we make it binding on the village; that is under the law. In return for that we give the village favourable rates for irrigation. The rates we charge them are possibly a little more than half the rates they would have to pay if they took irrigation spasmodically and we also give favourable terms of remission. The terms of remission are that if it is an 8-anna crop or less they get half remission and if it is 5 annas or less they get full remission. They get certain advantages and Government gets certain advantages We have an assured income; they have not an assured supply, but we undertake to supply water whenever they want it to the extent we can, and we do not enter into an agreement with a larger area than we can provide for.

28892. *The Raja of Parlakimedi*: Do you enter into the agreement directly or through the Collector or the Deputy Commissioner?—It is done by the Irrigation Department.

28893. Is that to be confirmed by Deputy Commissioner at all?—No; he does not deal with it at all.

28894. At what periods do you revise rates?—Agreement rates are fixed for a period of ten years; certain rates are fixed and the people know what those rates are when they come into the agreement. I do not mean that we fix one rate for the ten year period; we fix a scale of rates which rises to its maximum in the period of ten years. Other rates are reconsidered every year; that is to say, the local irrigation officers send up any proposals they wish to make each year for revision, and then the matter is considered. All rates, of course, are fixed by the Local Government.

28895. Is the revision done by the Irrigation Department?—It is done in the Irrigation Department by the Member? I should put it up to the Member and he would pass orders on it. But we have a new scheme; we are getting out an Irrigation Bill for the Central Provinces. Under that Bill we propose to have a Board of the Legislative Council which will consider and make suggestions to the Local Government on all proposals for rates. That places the matter within the purview of the Legislative Council; they were very anxious to have it so. Provision for this is included in the Bill, but the Bill has yet to become an Act; I do not know how long that will take.

28896. Does the Irrigation Bill permit private bodies to construct such schemes, enter into contracts in respect of area and rent, and make contracts with the ryots?—As far as I know, there is nothing to prevent them doing so and it is done; but I should not like to say anything about it authoritatively; I know it is done; malguzars charge their cultivators rates in certain cases. I do not know anything about written agreements; I have not heard of any, there may be some.

28897. It is a thing to encourage, is it not?—If it is applied properly; if the malguzar will maintain his tank and issue water to his cultivators, I do not see any reason why he should not charge for it.

28898. So long as it is not prejudicial to people further down?—You mean further down under his tank?

28899. No, separate property altogether. I do not know what the position is here, but in the Madras Presidency if there is a river bed in a zamindar's property it is his, and he can construct a scheme to irrigate his lands as long as it is not prejudicial to people further down: that is to say, people who are outside that zamindari. Is there the same thing here?—You are getting on to the question of riparian rights, and I am not competent to express any opinion on that matter, I do not know.

28900. How are the irrigation rates fixed?—I think, as a general principle, you can say they are fixed at the highest rate which we think we can reasonably take from the cultivator and expect him to pay.

28901. Is it according to the crop he raises?—Yes, different rates are fixed for different crops.

28902. Is the annual or biennial silt clearance in irrigation channels done entirely by the department or do you receive any co-operation from the cultivators under it?—What is done is done entirely by the department, but we do not deal with silt in the Central Provinces; we are lucky in that respect. There is only one canal where we get any silt. Most of our schemes are tank schemes and it is impossible to get silt in tank schemes, we are not troubled with the question of silt. We do all our annual repairs ourselves; we do not get assistance from the cultivators.

28903. Do you ever try to enlist their sympathies for that?—No, we do not; I should think they would object very strongly; we have never even thought of it.

28904. *Prof. Gangulee*: You told us that you were in touch with the Agricultural Department?—Yes.

28905. You realise that the extension of irrigation is often held back by the agricultural situation?—Certainly.

28906. Have any specific problems been suggested to your mind which you would have liked the Agricultural Department to tackle?—There are a great many problems; one, for instance, is the question of manure; that is a problem which they have been tackling. It is especially necessary to tackle it in the north of the Province where they say the outturn of rice instead of improving is deteriorating, and we can do nothing without some suitable manure. They proposed *sann* hemp, but we find that *sann* hemp

cannot be grown without irrigation before the rains, and many of the works in the north are such that you cannot count on providing irrigation before the rains, so that we want something else. There are lots of problems.

28907. These problems, which you state here, were suggested by you to the Agricultural Department?—We suggest them as they arise, yes.

28908. Is there any problem in connection with soil: for instance, the effect on the tilth of soil, or deterioration of soil, due to irrigation?—The only problem concerning the deterioration of soil due to irrigation is the question of outturn without manure; that is the only problem we have of that kind.

28909. In order to obtain the full benefit from irrigation, you think consolidation of holdings is very necessary?—I think it is essential in this area of Chhattisgarh.

28910. Would you advocate legislative measures?—I think they are essential, you cannot do without them.

28911. Your experience leads you to think you must have legislative measures?—Yes; I do not see how you can consolidate without legislative measures.

28912. On page 132 of your note you refer to a colonisation scheme, you say, "This development can be secured quickly only by colonisation, a matter which is under consideration". What is this area?—In Chanda, south of Nagpur.

28913. Am I to understand that you have got a definite colonisation scheme before Government?—No, we have not got a definite colonisation scheme, we have got proposals which are now being discussed; I recently sent them to the Deputy Commissioner there and he is considering them and will no doubt make further proposals. We have no definite scheme which we have introduced. We are considering the introduction of a scheme.

28914. You feel that such colonisation would help the extension of irrigation?—If we can get the colonists, there are large areas of ryotwari land, we can put the colonists on the ryotwari land and get that developed. At present it is uncultivated; they will cultivate this land and we hope in time that some of them will spread into the malguzari areas; the population is insufficient.

28915. And that area which now is uncultivated could be cultivated?—Yes; we are only dealing with areas under irrigation works.

28916. Could you kindly give the Commission the main outlines of your proposals?—The main outline is first to find an area where there are cultivators who are accustomed to growing rice and who have not enough land to meet their requirements. It has been suggested that the Kistna district in Madras is a suitable area. We have made no enquiries in Madras about that so far. The cultivators there, I am sure, are accustomed to very good irrigation and they have silt. The conditions in Chanda are very different from what they are accustomed to; we cannot yet say whether they will be suitable, so that we cannot say where we are going to get our cultivators from. When we have done that, some, at any rate, of them might come and look at the land; if they approve of it they will be given certain concessions. One idea which has not yet been approved, is that they should get rights of transfer; they will be told in advance that they will get rights of transfer; those rights will actually be given to them, but they will be told that the rights will not be confirmed until they bring under cultivation certain definite portions of the area they are given. Wells will be constructed for them, and there will be various minor concessions of that kind; we should do what we could to make them contented.

28917. Can you give us any idea of the area that you might colonise in that way?—Not less than 20,000 acres under irrigation works in that district.

28918. This morning a witness told us that irrigation is not popular; have you heard such views?—I think you will always hear such views in certain areas; you cannot say it is not popular generally, but you can say there are areas in which it is represented to be unpopular, possibly with a view to getting further concessions, or possibly because there may have been a failure at some time which the people have not yet forgotten. I would not say that generally irrigation is unpopular; but to get a proper idea of that you should make enquiries in areas where there is no irrigation and which are contiguous to areas where there is satisfactory irrigation.

If you make enquiries on these lines, you will generally find that the people who have not got irrigation would very much like to have it. If you ask the people who have already got it, they have nothing to gain by saying they like it: they have something to lose, because you might put the rate up, so that you cannot expect them to be enthusiastic

28919. Is the area under irrigation extending, decreasing or remaining stationary?—All our irrigation is done under agreement; if agreements expire in a good year the cultivators will not renew them, and at present our area of irrigaion is decreasing as we have had a sequence of three good years.

28920. Why?—Because this is a Province in which crops can be grown without irrigation; if a man finds in the year in which his irrigation agreement expires that he is going to get a moderate crop without irrigation, why should he bind himself for ten years to pay an irrigation rate when he can postpone it to the next year or the year after when he may get a bad year of rainfall.

28921. Even if he had bumper crops under irrigation?—There is always that temptation; you see we have got to get the occupiers of 80 per cent of the area to agree in order to get an agreement, and a few big holders standing out prevents us from getting that agreement.

28922. Is irrigation a Transferred subject in the Central Provinces?—It is a Reserved subject.

28923. How long will it take to complete the irrigation projects now under contemplation by the Government?—We have a programme of fourteen years which will expire in about ten years hence; as a matter of fact, we shall not complete them all by then: there would be a certain amount of work to be done, but the major portion of the work will be done in about ten or twelve years.

28924. Which irrigation officers come in direct contact with the cultivators?—Of course, all irrigation officers are supposed to come into direct contact with the cultivators, and the lower down you get the more contact there is.

28925. You do not come in direct contact with the cultivators?—I see cultivators and I talk to them when I do see them, but I am not normally in direct contact with them.

28926. Are the men who come in contact with the cultivators sufficiently informed about the agricultural problems of the Province: these revenue collectors and so on?—The Canal Deputy Collectors are revenue officers as a rule; we can appoint either revenue officers or Public Works officers as Canal Deputy Collectors, but we think it politic as a rule to have revenue officers because it brings the Revenue Department into irrigation, which is desirable; they then see our point of view and they are not only useful as Canal Deputy Collectors, but they are useful afterwards.

28927. Are your subordinate officers sufficiently well informed about the agricultural problems of the Province?—They have no agricultural training; they have only got the knowledge they pick up. If you ask me whether they get any knowledge of the agricultural problems of the Province, I should say "No", because they have no chance of learning it, they are concerned with a particular area, and they are probably conversant with the problems of their own areas.

28928. They could be utilised to create a demand for irrigation?—Certainly, it is one of their jobs to go round and talk to the people; they are all supposed to do that.

28929. Do you think some sort of short course in Nagpur would be desirable for these men?—No, I do not think it would do much good.

28930. So that they would view the problem from the right perspective?—No. I do not think there is any need for that.

28931. *Mr. Calvert*: You have said that the first main obstacle to irrigation is the high cost of works?—Yes.

28932. Could you give just a rough idea of the cost per acre irrigated?—I have given a figure in a note* on the Indian Irrigation Commission's Report as to the extent to which we have carried out their recommendations; the figure there worked out at Rs. 75 an acre; that is assuming full development.

---

* Not printed.

28933. What do the charges amount to; interest, maintenance and running charges per acre irrigated?—We hope to do the maintenance and running expenses at Rs. 2 per acre; we have not got to it yet; our average at present is something like Rs. 2-8-0.

28934. You have got to add on to that interest charges?—Yes, interest charges are a variable quantity depending on the current rate, and I cannot tell you off-hand what those amount to.

28935. Your minimum charge per acre just to avoid loss must be about Rs. 7-8-0 per acre, including interest charges?—That would be assuming that all our works are productive; none of our works are productive.

28936. What is your minimum charge in order to prevent loss?—I am afraid I could not tell you off-hand; I do not know exactly what the interest charges are.

28937. Who actually pays for the water: the cultivator or the owner of the land?—The occupier.

28938. That is the cultivator?—Yes; it is the man in occupation of the area.

28939. You have mentioned that irrigation leads to a rise in the value of the land commanded; does the owner pay anything?—No, there is no owner's rate.

28940. Who is your immediate superior?—I work under the Revenue Member.

28941. Are you a Secretary to Government?—Yes.

28942. *Mr. Kamat*: On the total outlay on irrigation canals what is the net return in this Province?—At present it is nothing. We can just about cover our working expenses.

28943. *The Chairman*. Is that including interest charges?—No.

28944. *Mr. Kamat*: You have mentioned here as one of your obstacles the uncertainty of getting income?—Yes.

28945. That is because of the rainfall conditions?—Exactly.

28946. That is again because your income depends on the water supplied for requirements of rice, and not sugarcane?—Our works are not suitable for sugarcane; they were not meant for sugarcane; our works were constructed as protective works to protect the areas they covered; the idea is that you can best protect the area by doing large areas of irrigation, and the crop that requires water is rice. If we confined it to sugarcane I do not say we could not do a certain amount of sugarcane, but it would be a comparatively small area; the works would cease to be protective, but a few people would make a large profit.

28947. You are working in friendly co-operation with the Agricultural Department?—Yes.

28948. Would you prefer that irrigation should be a Transferred subject and that irrigation should be under the same Minister as agriculture?—No; I would prefer that it was not.

28949 You would not like that?—No.

28950. Have you any objection to telling us why you do not like it?—The real reason why I do not like it is that I think as far as possible irrigation should be kept out of politics. Irrigation is a very difficult subject and it requires a lot of consideration. If it were under a Minister something might be done which would upset the working or efficiency of our schemes; as long as it is Reserved there is not the same chance of that happening.

28951. Do you mean there is a danger to schemes proposed by the irrigation officers?—There might be, yes.

28952. Or a danger to the services?—No, I was not thinking of the services; I was thinking of the efficiency of irrigation.

28953. The efficiency of the actual administration you mean?—The efficiency with which the schemes are worked, the efficiency of the irrigation.

28954. So that you do not apprehend that the schemes would be rejected, but you apprehend that efficiency in the department would go down?—I say it might. I do not apprehend difficulty about money for new schemes or anything of that kind, because I do not think there would be that difficulty. I think Ministers are just as anxious as Members that irrigation schemes should be made, but it is the organisation and the management of the department in working the schemes that I was thinking of; that might be upset; I do not say it would, but it might

28955. I am not quite clear why you should have that apprehension as to the efficiency of the Irrigation Department as compared with the efficiency of other departments which are under Ministers?—I cannot give an opinion in regard to other departments, but Ministers are naturally more affected by political pressure than Members, who are not concerned to the same extent with political opinions.

28956. I want to know what actually is the great difficulty?—There is no difficulty; there is a danger.

28957. Owing to the complicated character of the administration of this particular department?—Because this department requires so much more careful management in my opinion than most other departments; it is much more easily upset. Let me give you an example: you might get a big agitation for reducing rates; the Minister might feel he could not hold out against it and he might permit it. A Member is very much less likely to do that.

28958. Then you think the revenue would suffer?—Not only the revenue. Another way in which you can put it is that you might have a big agitation for reduction of maintenance costs. We know perfectly well that our maintenance costs are what would be considered by the outside public to be high. The outside public cannot judge, but the Minister might not realise that, he is naturally affected by the opinion of the outside public and the politicians. We wish to avoid any danger of that kind. We should keep down our cost of maintenance as far possible, but we cannot do with a smaller establishment or keep the works in efficient order by spending less money. It might, however, be difficult to convince the Minister that that was so

28959. *Sir Henry Lawrence:* Can you tell me how this agreement system works? What is it the cultivator agrees with you to do?—He agrees to pay a certain rate for the whole area cultivated with rice in his village in every year during the term of the agreement, in return for our giving him a favourable rate. He pays whether he irrigates or not, but he gets remissions if his crops are not good.

28960. He has no definite right to the water?—He has no definite claim to any certain quantity of water. He has the right to a fair share, and it is our business to distribute it fairly, but he cannot complain because he does not get as much as he would like.

28961. Do you and your officials see that the water is distributed in rotation when it is short?—We have not worked any rotation system here; we design our schemes so as to distribute the water over the whole area at the same time.

28962. Are you anticipating a much larger demand for water in the future than you have now on the existing canals?—There are many works which are not anything like fully developed. We hope eventually to develop them fully and to get very much larger areas of irrigation than we have at present.

28963. You mean that the whole of the water available is not taken?—Not at present.

28964. What proportion is not taken?—The figures I gave in this note include the schemes under construction, which have not yet come fully into operation. The present area of irrigation is about half what we expect to cover eventually.

28965. Can you give me the figure for your completed schemes?—I have not taken that out separately. I could get it out for you.

28966. Will you do so?—Yes.

28967. *Sir Ganga Ram:* Have all the recommendations of the Irrigation Commission been carried out in this Province?—I have sent in a note* about that. I was asked for a note on the action taken on the recommendations of the Irrigation Commission. We have carried out their recommendations almost in full, except in regard to the manner in which the rates should be assessed.

28968. Was the Mahanadi scheme one of the recommendations of that Commission?—The Commission thought a number of small schemes might be constructed from the Mahanadi. We have constructed one large scheme.

28969. Are you aware that in the first part of the Irrigation Commission's Report it is said that 37 per cent of the water goes back to the sea? How much of the rainfall in this Province is used for irrigation and disappears by evaporation, and how much goes into the rivers and is lost?—I could not tell you, but only a small proportion is used for irrigation.

28970. The Commission must have calculated that figure on some basis, and they must have worked out the figure Province by Province?—I have never seen any figures.

28971. They do not give any. If you multiplied 40 inches, which is the lowest figure by the whole area, could you not tell us how much is used for irrigation?—One could arrive at a rough approximation.

28972. It is very important?—Even then, one would have to take private irrigation works into account. It would be a very rough approximation.

28973. When you recommend a project to the Secretary of State, whether as productive or protective, how much acreage rate do you count on?—In the old days, when the Irrigation Commission wrote their report, they said we would be lucky to get Rs. 2 an acre. At that time working expenses were put at 8 to 12 annas an acre. Both these figures have radically changed. It is now possible to get up to Rs. 4 an acre.

28974. And your working expenses have increased also?—Yes.

28975. What, then, is the basis of your calculation when you submit a project to the Secretary of State?—We base our calculations on the rates that are in force in the area or in an area contiguous to that in which the project is situated. At present we always allow Rs. 2 an acre for maintenance and working expenses, because we hope to work to that rate, but we are actually working at Rs. 2-8-0.

28976. What about the acreage rate?—We generally put in our agreement rates for the nearest similar area.

28977. I want to know on what basis you make your recommendations to the Secretary of State, *i.e.*, that a project will bring in so much, less working expenses so much, etc.?—We take the rates prevailing in the nearest similar area. On most places our charges are on a scale which runs up to Rs. 3, Rs. 3-8 or Rs. 4 an acre.

28978. What do you take as an average? Rs. 4?—No. We take the actual average as it would be according to the scale.

28979. But when you submit a project to the Secretary of State, what do you put down to prove whether it is productive or protective?—We put in Form 155, financial forecast. We give a forecast for each year of the period up to a date ten years from the proposed date of completion of the project. The income is calculated from that.

28980. Have you had any productive projects sanctioned by the Secretary of State?—Yes, three.

28981 Are they likely to be productive?—Two of them will not be, within any reasonable period. The third may possibly be productive in time, perhaps in twenty to thirty years. They will have to be struck off the productive list.

28982. Can you strike them off yourselves?—I am not sure.

28983. Will you have to make a further representation to the Secretary of State to do that?—In the only case of that kind I have had, we had to send it to the Secretary of State in connection with another question, and then we said it would have to be relegated to the unproductive list The Government of India agreed and said we should do so. I think we have the power to do it.

*Not printed.

28984. When making your calculation as to the return a project will give, do you take account of the enhancement of revenue that will occur?—In certain projects which have been sent up that has been allowed for, but we have come to the conclusion that our enhancement of revenue will be very small indeed, because such enhancements are limited. You can only make a certain percentage enhancement.

28985. That is of the ordinary revenue, but not the water advantage rate. Even when the water advantage rate is taken into account, do your projects still prove unproductive?—We get no appreciable indirect revenue here.

28986. But when you submit a project, whether productive or protective, you must show what the revenue enhancement will be?—We show what we expect to get but it is a very small figure.

28987. Will not it increase their production?—Yes, but we get only a small amount from it, because the full enhancement which is usually made can be made without it. The credit we get is very small.

28988. What portion do you get credited?—I think when we sent up the revised estimate of the Wainganga scheme we said we hoped to get Rs. 60,000, but the Government of India cut it down to Rs. 30,000.

28989. Do you take any interest in the increase of wells?—We have nothing to do with wells.

28990. We were surprised to hear this morning from a very notable zamindar that they have no way of getting information as to how to make a *pucca* well?—The Agricultural Department have done a certain amount of work in that direction. They had an Agricultural Engineer.

28991. Is it a great scientific matter to make a *pucca* well?—No. I should think the District Councils might deal with it. It would be difficult for us to do so; we have enough work to do.

28992. Is there no lift irrigation here?—None, except on a small scale.

28993. None on a big scale?—No.

28994. Is there no possibility of it?—I can see no necessity for it.

28995. Not to bring dry areas under irrigation?—You could probably do it better by direct flow.

28996. But you do not do it?—We have done well, on the whole. We only started irrigation in this Province after the Irrigation Commission's report came out. There was no irrigation here before that. That was only twenty-three years ago.

28997. A prominent zamindar told me that the crop here fails sometimes for want of one watering?—That may happen.

28998. Do you not think some means of giving them one watering might be found?—The only satisfactory means is to construct more works or larger works, or to limit the area we irrigate from our present works if we find them insufficient for the whole area.

28999. When you distribute water, what duty do you allow at the outlet?—For rice it is 80 acres to the cusec at the outlet.

29000. You distribute on that basis?—Yes.

29001. Is not that a very low figure? We get 200 in the Punjab?—It may be a low figure, but we have to do everything we can to encourage people.

29002. You say that sometimes you have not enough water. If you raised the duty you might have it?—The first thing we have to do is to get the cultivator contented, and in order to do that we have to give him what he regards as a sufficient supply of water. If we do not do that he will never be contented.

29003. In my experience, the zamindar is never content with the water he gets?—That is so.

29004. We are all fighting for water?—We have to make him sufficiently contented to ensure his entering into an agreement with us; otherwise he will not do so.

29005. Is agreement the great goal of irrigation here? You cannot do without agreements?—I am afraid it is impossible. It is obvious that where you have an area where people can grow fair crops without irrigation, you must have an incentive to make them pay for the water.

29006. They cannot grow wheat without water?—They very seldom require any water at all for wheat Generally it does not pay them to take water for wheat; it is not worth their while.

29007. Why? You have a large area under *juar*?—Yes, but it does not pay them to take the water. If it did they would, but we know from experience they do not.

29008. Has any research been carried out on that?—I think the Agricultural Department has done a good deal.

29009. Why are they taking to *juar*?—They have always grown it in this Province.

29010. But you could divert them to some better crop?—We hope in time to divert them to rice. Rice is the crop we are after. It is the one crop which does require irrigation and is grown on a large scale in this Province, and it is the crop for which the people in the old days constructed their own tanks.

29011. Can you tell me what delta of water is required for maturing rice?—You cannot generalise about irrigation in the Central Provinces; conditions here vary every year.

29012. Eliminating the figure of rainfall, how much delta is required?—The figures for transplanted and broadcasted rice differ; I think they are something like 3 feet and 3 feet 6 inches. That is the absolute minimum, but please do not take those figures as authoritative.

29013. Are the people content with 4 feet 6 inches?—If we gave them that we should be doing well, but we do not distribute anything like that.

29014. Do you keep your outlets always flowing?—No; we have to be economical about water here.

29015. Do you not work the rotation system?—No. When we are working with tanks, as we mainly are in this Province, the whole idea is to hold up our water until it is essential that we should deliver it. There is nothing here like the continuous flow you have in the Punjab. We hold up our water until it is necessary to give it to the cultivator, and then we give it to him in a limited time. That is why we have a low duty.

29016. Do you site your tanks on a watershed, so that the water can flow?—There are many considerations to be borne in mind in selecting sites.

29017. Could you put them in valleys and pump the water up to a good canal?—I suppose we could, but it would not be economical.

29018. You cannot say that without working out the figures?—Unless there is some particular area that especially requires water and we cannot possibly irrigate it by flow, it would not be economical to introduce pumping.

29019. The ordinary way of making a tank is to put a *bund* across the lower part of a valley. If you do that, the water will have to be pumped out?—No, we should irrigate the area lower down.

29020. Do you ignore sites where the water is lower than the ground level?—We first decide what district we want to have a tank in.

29021. Have you any tanks with high retaining walls, with masonry dams?—We have only a few small masonry dams. This country is not suited to them.

29022. Are your dams practically all earthen embankments?—Yes.

29023. Has your cost of labour risen since the War?—Yes, very considerably.

29024. How much?—40 per cent to 50 per cent.

29025. Have your acreage charges gone up accordingly?—We keep them as high as we can; that is one of our principles here; but at the same time we try to keep people contented.

29026. That is a word I do not understand?—I will define it for you. A contented cultivator is one who is willing to renew his agreement. That is all we want him to do.

29027. Could you make out a statement showing how much water flows away from the Central Provinces?—It would be very difficult.

29028. The Irrigation Commission said definitely that 37 per cent was lost. They must have made some calculation to arrive at that figure?—They must, but I think they must have been cleverer than I am.

29029. *Dr. Hyder*: They have not disclosed that information.

Sir Ganga Ram: No, they have not published their calculations, but they say definitely that 37 per cent goes to the sea.

29030. *Sir Thomas Middleton*. Your system of irrigation is directed almost exclusively to the rice crop?—Yes.

29031. And you irrigate 1/5th to 1/6th of the total area of rice in the Province?—That includes the private irrigation works.

29032. You point out two obstacles to increasing the area of irrigated rice, the first being fragmentation of holdings?—That is a serious obstacle in this Division.

29033. In another case you say the obstacle is lack of manure, the fact that on irrigated land the soil rapidly loses fertility?—Yes

29034. Have you, or has the Agricultural Department, given special attention to the manuring of these areas which are found to deteriorate rapidly in quality?—They are still investigating them. They proposed that we should use *sann* hemp, and we tried it, but we cannot use it on a big scale because we cannot water it when it requires water, which is at the end of the hot weather In the tracts in the north of the Province, where this occurs, we have not got the water then. There are also caste objections to growing *sann* hemp, and in many villages the people refuse to grow it. We are now considering oil-cake as an alternative. I understand there is a chance of oil-cake being suitable, if we can obtain it on a sufficient scale at a reasonable price.

29035. *Sir Ganga Ram*: If you could get a good price for the oil it could be done?—Yes.

29036. *Sir Thomas Middleton*: The problem is not yet solved in this district?—No.

29037 I understand all the water you have available is not taken up, and you often have a surplus?—Almost always there is a surplus.

29038. Has any effort been made to induce cultivators to take that surplus at very low rates for the growing of fodder crops?—No.

29039. Do you not think when you have a surplus to dispose of you might make tempting offers to get cultivators to grow fodder crops?—Yes, but so far we have had no demand. We have tried to push it, but there is no demand for fodder crops. It is only occasionally, round the Jubbulpore area, that there is a demand for fodder. The cultivators have never asked for it.

29040. Sugarcane is the only crop other than rice for which any appreciable quantity of water is taken?—Yes. People are keen on sugarcane.

29041. *Dr. Hyder*: You say the cultivators are not willing to renew their agreements, and you define a contented cultivator as a person who is willing to renew his agreement. Where does the trouble lie? Have you found out?—Yes. A man enters into an agreement and may be quite satisfied with it. At the end of ten years it expires. In the year it expires it may be that the rainfall is good; there are years when a bumper crop can be had without irrigation. There is then no object, from the

point of view of the cultivator, in paying for irrigation, and he puts off his renewal till the following year, and goes on in the hope that he may not have to renew it for some time.

29042. Everybody knows that crops can be grown without the help of irrigation?—Yes.

29043. But sometimes (say once or twice in ten years) they cannot be grown at all without it?—It is not quite so bad as that.

29044. At any rate, the crops will be seriously damaged?—Yes.

29045. This knowledge is possessed by you, by the cultivators and by the Members of the Council?—Yes.

29046. Then why is it that the cultivator, knowing this, is unwilling to renew his agreement?—Because he knows that when the bad year comes he can renew it.

29047. But then he has to face the demand rate, has he not?—No. When the time comes that it is absolutely essential to have water, he says "Now I want to enter into an agreement", and we cannot refuse unless we have taken up such an area that we cannot take on more agreements. He may be kept out because other people are taking the water, but that is the only risk he runs, and in many cases that is not a real risk at all.

29048. The cultivator undertakes to pay you a certain rate for irrigation?—Yes.

29049 What do you undertake to do?—To give him water when he requires it to the extent to which it is available

29050. I submit the trouble lies in your last phrase "to the extent to which it is available"?—We cannot do more.

29051. I think the trouble here is this that the area from which agreements are entered into is considerably larger than the area which you can serve with your existing supplies?—I do not agree. I think our area is very fairly fixed. We have recently considered the question of the development of our works, and in doing so we take all the records of each work from the time it began, and then we decide what area a work can fairly be expected to irrigate.

29052 *Prof. Gangulee*: You always have a surplus?—I cannot say always. When we have our works fully developed we ought not to have a surplus in certain years, but where the works are not fully developed there is generally a surplus. If you look at the Irrigation Commission's Report you will see one of the points they considered was whether complete or partial protection should be afforded. At that time complete protection was proposed by this Province, but the Commission said "you cannot afford to do it", and that is true.

29053. *Dr. Hyder*: I agree with the advice expressed in that Report, and I approve of the system you have in force here; but the fact that the cultivators are not willing to enter into agreements shows there is some trouble somewhere?—Yes.

29054. The Taxation Committee's Report says, "In the Central Provinces, where the agreement is largely to the advantage of the Government, the occasional rate is considerably higher than the agreement rate." Do you agree with that remark?—Yes.

29055. Considering the fact that the agreement system works to the advantage of Government, do you not think that it would be desirable to guarantee the supply also?—We cannot do it; you are going back to what the Irrigation Commission said could not be done.

29056. The duty of water is 80 acres to the cusec?—Yes, at the outlet.

29057. Do you know what is the capacity of the reservoir?—We fix our duty on the tank; no two tanks have the same duty, the duty depends on the capacity of the tank compared with the rainfall, on the yield from the catchment area and also to some extent on the size of the scheme, because we have got to take our losses in the channels into account.

COL. H. de L. POLLARD-LOWSLEY.

29058. But, taking any particular tank or reservoir, you can soon calculate how many areas could be irrigated to bring your crop to maturity with so much water?—Yes, in a certain year, but not generally.

29059. Then when the rains fail and the cultivator wants water and says "Well, it is up to you now to fulfil your part of the agreement"?—We do; we give him all the water that is available; we cannot do more.

29060. But when the crop cannot be brought to maturity?—Then we give him the benefit of remissions. We have a certain scale of remissions. For instance, if he gets only an 8 anna crop he is given half remission.

29061. *Sir Ganga Ram*: I forgot to ask you about hydro-electric schemes. Have you seen Mr. Meares' survey of hydro-electric schemes?—Yes.

29062. He shows several falls in this Province. How do you propose to take advantage of them?—I have sent in a statement showing all the falls that have been investigated and also what power it was considered could be produced by each of those schemes. But no schemes have been constructed in this Province.

29063. What percentage of the whole area of the Central Provinces is Government land?—You mean ryotwari land?

29064. Can you give me a rough figure in acres?—I am afraid I have no idea.

29065. Have you got a contour map of the whole Province?—No, there are levels of course on the Survey of India maps. Some of them are contoured; I do not think that all of them have been contoured yet.

29066. How far apart are they?—I think 50 feet

29067. Meares' map shows 30 or 20 feet I think?—I do not remember that, but it is a long time now since I saw the map.

29068. I will send you that map. Would you mark the irrigated areas and dry areas and all that sort of thing? I have got the maps of other Presidencies?—I can mark all our schemes. But I sent you a map with the note on the Irrigation Commission's Report

29069 That does not deal with hydro-electricity?—I sent you another map showing the position of the hydro-electric schemes that have been investigated.

29070. Is no subsoil survey made?—No.

29071. You cannot tell the depth of the spring level anywhere at any place?—We can only tell it by examining existing wells. The wells in every village are nearly always deep wells.

29072. You have not conducted a survey?—No.

29073. Are any wells used for irrigation purpose?—Yes, there are generally *kutcha* wells in river beds.

29074. How can *kutcha* wells stand?—I suppose they dig them out every year. There is one part of the Province where they irrigate their lands, in the Shahgarh tract, and that is in area where the irrigation of wheat is essential. We have built two little works there and straightaway we have got Rs. 4 an acre.

29075. Cannot you advise them how to make *pucca* wells?—We do not want them to, because they take all our water as it is found to be more convenient.

29076. When they come to the water level, how do they increase the depth of the water? How is the water retained in the place? Is the soil rocky or firm?—I do not think it is rocky; I think it is a light soil.

29077. If it is light soil, then it must fall in?—I think a great many of these wells were *pucca* and directly we introduced the irrigation scheme from which they get irrigation by flow they abandoned all their wells and took to our irrigation.

29078. In examining the Meteorological Officer at Simla we were told by him that if he had the funds he could foretell three months ahead the exact nature of the

monsoon which would come in. I pointed out to him that the present forecast is of no use to the zamindar or the irrigation officer, because a forecast of only 24 hours is no good. If he were able to tell us three months beforehand what the character of the monsoon was likely to be that would be very valuable information for you, would it not?—We should very much like to have it, but I cannot say off-hand what use we would be able to make of it.

29079. *Mr. Calvert*: Could you kindly work out the total cost to Government per irrigated acre and the total return to Government per irrigated acre?—That is on the present areas of irrigation?

29080. Yes, all charges?—Very well

29081. *Prof. Gangulee*: What percentage of the total number of agreements is not renewed?—We have just got to the stage when the first agreements have fallen in. Unfortunately this has occurred in the Mahanadi area which is the most difficult area from which to get agreements. I cannot give you the exact figures but I should think that something like 140 agreements have fallen in during the last two years, out of which something like 20 only have been renewed. The last two years have been years of good rainfall.

29082. I find from this note which we have submitted to us that the total expenditure on irrigation work is something like 5½ crores?—Yes.

29083. Is there no return on that expenditure at all?—There is no direct return.

29084. You state here that you expect to get some sort of return within thirty or forty years?—The Irrigation Commission stated that you could construct works in the Central Provinces but you would be lucky if eventually you get a return of 1 per cent. Of course that does not take into account the interest charges after paying for the expenses of maintenance and management. We have got to the stage where we pay for our maintenance and management but we have not yet got 1 per cent return. We will no doubt get it eventually But I must make it quite clear that these works were never expected to pay.

29085. And your view is that if you can make this agreement system popular you can make irrigation pay some time?—We certainly would be able to make our 1 per cent.

29086. Is there any Irrigation Board in this Province?—No. There is a Council Committee on Irrigation and all important proposals are placed befor this Committee. It is not entirely a Council Committee for we have three or four members of Council on it and a couple of men who are not members of Council.

29087. Are there any non-officials on that Committee?—They are all non-officials except myself and the Member-in-charge.

29088. Was it lately formed?—It was formed about three or four years ago, soon after the new Councils came into being.

29089. *Sir Ganga Ram*: Who appoints that Committee?—Government. We originally intended that it should comprise only Members of Council, but in those days we could not get enough men interested in irrigation from the Council, and we appointed outside men. But now as far as possible Members of Council are appointed.

29090. Is the question of agreements under the purview of the Minister or under the Council?—The Irrigation Standing Committee can deal with anything.

29091. Can they ask questions in the Council?—They can ask any question they like.

29092. Whether the agreement is excessive or not?—Anything they like.

29093. Would that be in their jurisdiction?—Certainly. We would then give them a reply telling them all about it.

(The witness withdrew.)

COL. H. de L. POLLARD-LOWSLEY.

APPENDIX.

Statement showing the financial position in regard to irrigation works in the Central Provinces for the year 1925-26.

Capital sums expended on works for which Capital and Revenue Accounts are kept. (Direct charges.)	Capital sums expended on works for which neither Capital nor Revenue Accounts are kept. (Works expenditure.)	Total income for 1925-26 (including indirect revenue).	Working expenses for 1925-26.	Interest charges.	Indirect charges.	Total columns 4. 5 and 6.	Net loss.	Remarks.
1	2	3	4	5	6	7	8	9
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
(1) 5,20,75,935	...	10 01,679	10,43,668	22,28,079	86,343	33,58,090	23,56,411	(*a*) Establishment and tools and plant charges are not recorded in the Finance Schedules separately under construction and maintenance for works for which no capital and revenue accounts are kept and hence they are not included in these figures.
(2) ...	(*a*) 44,64,789	(*c*) 1,34,198	2,27,602	(*b*)	(*b*)	2,27,602	93,404	(*b*) Interest and indirect charges are not worked out for works for which no capital and revenue accounts are kept.
								(*c*) Indirect revenue is not credited to works for which no capital and revenue accounts are kept and hence it is not included.
5,20,75,935	44,64,789	11,35,877	12,71,270	22,28,079	86,343	35,85,692	24,49,815	

APPENDIX.—*Concluded.*

—	Net area assessed in 1925-26.	Area irrigated in 1925-26.	Capital cost per acre assessed.	Capital cost per acre irrigated.	Income per acre assessed.	Income per acre irrigated.	Total cost annually to Government per acre assessed (column 7 ÷ area assessed.)	Total cost annually to Government per acre irrigated (column 7 ÷ area irrigated).	Remarks.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Works for which both Capital and Revenue Accounts are kept.	362,062	396,198	*144	*131	4·7	2·5	9·2	8·4	* Worked out on the direct charges.
Works for which neither Capital nor Revenue Accounts are kept.	45,788	46,865	†98	†95	2·9	2·8	4·9	4·8	† Worked out on works outlay only.

Mr. CHHOTELAL, Extra-Assistant Commissioner, and Mr. G. P. BURTON, I.C.S., Deputy Commissioner, Raipur.

Mr. Chhotelal and Mr. G. P. Burton were examined on the Note on the Consolidation of Holdings in Chhattisgarh (reprinted below) by Mr. J. F. Dyer, I.C.S., Commissioner, Chhattisgarh Division.

Chakbandi is the term commonly used in Chhattisgarh to denote the consolidation of holdings. While the operation of Hindu and Mahommedan law tends everywhere towards the sub-division of holdings, the evil of fragmentation is, in this Province far more serious in the Chhattisgarh Division than elsewhere owing to the evil effects of the now obsolete practice of *lakhabhata*, which was a device to equalise the holding of land by a periodical distribution of the fields in the village so as to ensure that each cultivator got his share of the different kinds of land. The result is that it is common to find in all the rice areas of the plain of Chhattisgarh a holding of, say, 10 acres distributed all over the village area in about 40 little plots of land. This extreme fragmentation of holdings is an obvious bar to the advance of agriculture, and the establishment of large Government irrigation work makes the evil all the more apparent and a remedy all the more desirable, because fragmentation renders the economical distribution of water an impossibility and the transplantation of rice, which the establishment of an assured water-supply makes possible, cannot be carried out by people who have to waste much of their time in travelling from one scattered plot to another, because the operation of transplantation must be done during a definite and short season and therefore must be carried out at high pressure.

2. The existence of the evil is obvious. The cure is also obvious. Everybody is agreed on these two points. The difficulty is to evolve a procedure which will effect the cure. This note deals entirely with Chhattisgarh. The evil there, being the greatest, must be tackled first.

3. Complete consolidation, that is to say, the reduction of each cultivator's holding to only one plot of land, is neither possible nor desirable. Firstly, even if large cultivators, who hold land in many villages, are left out of the account, quite small men have frequently separate plots of land which, though not far apart are in separate revenue villages, the lands of which are cultivated from one centre of habitation and cultivation. Even if all the land of one man is in one village, it is only in exceptional villages that it would be to his advantage to have all his land in one block. A village may contain light, heavy and medium soils, irrigated and unirrigated rice-land, non-rice land suitable for wheat and other cold weather crops, garden land and sugarcane land Consolidation should therefore be, it is universally admitted, by blocks of soil, locally known as *khars*. A man who has several kinds of land at persent will not be content with any scheme of consolidation which gives him land of fewer kinds, and quite rightly so, as the possession of land of different kinds and suitable for different crops is an excellent insurance against the vagaries of the season. Consolidation by *khars* is therefore the object to be aimed at. If the nature and the lie of the land makes only one *khar* feasible, so much the simpler the task.

4. The little consolidation that has been carried out so far has been the result either of the deliberate efforts of the Government or of the people usually the landlord alone, acting without the intervention of the Government. Government effort has attained little success, because it has not been sustained, and busy Deputy Commissioners or other revenue officers have been asked to do what they could in the time they could spare from their other duties. The task, however, requires undivided attention and unremitting patience, and not every man is temperamentally suited to it, whatever his other merits may be. The careful selection of the personnel of the *chakbandi* staff is therefore an essential condition of success.

5. Mr. H. M. Laurie as Commissioner, Chhattisgarh, in 1905 first attacked the question. Settlement operations were then in progress in the Bilaspur and Raipur districts, the Drug district not yet having been constituted out of parts of the other two. The two Settlement Officers were directed to make an effort towards consolidation. In the Bilaspur district, success was attained in the village of Nandal, now in the Bemetara tahsil of the Drug district, but the village was in no way typical of the

difficulties of *chakbandi*, because the home-farm having been already consolidated by private effort, the malguzar had no axe to grind in the operations and because the village, being partly a wheat one, had not the minute sub-division of the typical Chhattisgarh rice village. In Raipur the Settlement Officer made an effort himself in one village and issued instructions to guide an Assistant Settlement Superintendent in 19 villages. The Assistant Settlement Superintendent was Mr. Chhotelal, now an Extra-Assistant Commissioner, and I have had the advantage of discussing his operations with him. He is of opinion that with continued effort he would have succeeded, had there not been legal difficulties and had not the Local Government ordered the discontinuance of the operations early in 1907. The orders of the Local Government assigned no reason but merely stated that the Chief Commissioner, after careful consideration, had decided not to proceed further in the matter, but it is clear from the report of the Settlement Commissioner on which the Chief Commissioner's orders were based that unwillingness on the part of the people to fall in with the idea, the impossibility of achieving results which could be incorporated in the settlement records then in preparation and legal difficulties, which I need not go into now, as alterations in the revenue law have removed some of them, were the reasons why the experiment was abandoned.

6. A new attempt was made in 1912, the initiative being taken by the Local Government, which was impressed by a perusal of what had been achieved, in Austria and by the increased importance of the question owing to the construction of Government irrigation works which had been in progress from the early years of the century. Little however resulted and I can best explain the failure by giving the facts of the Bilaspur district. The late Mr. Bell, the then Deputy Commissioner, set to work with enthusiasm. He succeeded in full in three small villages, one of which was in the malguzari portion of the district and the other two in zamindaris. None of these villages was however typical of the *chakbandi* problem. They were small and each contained fields which were large for Chhattisgarh and the distances between the scattered portions of holdings were consequently short compared with those in the average village. The *chakbandi* was done on the principle of three or four *khars* and has stood the test of time. Mr. Waterfall, the present Deputy Commissioner has recently visited the malguzari village Surighat in the Mungeli tahsil, and has found that the people are quite content with the new arrangements, but the malguzar of the village, when he attempted *chakbandi* in his neighbouring village of Mohtara on his own initiative, succeeded in consolidating his own home-farm but not the tenants' land. More significant than Mr. Bell's success in these three villages was his failure in two villages of the Bilaspur tahsil In one Mopka, the proprietor applied for *chakbandi*, but the effort to carry it out failed. In the other village, Bahitarai, the consolidation was actually worked out on paper, but the attempt completely failed on account of the firm opposition of some of the tenantry. In this village there has since been a very disputed case for partition among the proprietors which recently came before me on appeal. The spirit of unwillingness to come to an agreement about the partition probably goes a long way towards explaining why the consolidation effort failed Good will on the part of everybody, except in so far as legislation can empower the will of the majority to prevail over the opposition of the minority, is very necessary for success, and the operations which I hope will now be undertaken should not be prejudiced by making attempts in villages where faction fights and such like impediments to progress exist. The history of the efforts elsewhere in the Division need not be gone into, as Bilaspur is a sufficient illustration.

7. Everywhere in the Division, but more in the Janjgir tahsil of the Bilaspur district than elsewhere, some consolidation has been done without the help of the Government. For future operations this private consolidation is both a disadvantage and an advantage. I mention the disadvantage first, because unless this point is made clear future operations will be hindered. I have had a register prepared showing what has been achieved in 27 villages of the Janjgir tahsil, and I understand that there has been a little consolidation in a few more villages not included in the list. This consolidation has been almost though not quite entirely in the malguzar's home-farm. It has gone on over a long term of years, and it is not possible now to find out exactly how all the consolidation in each village was effected, but though no doubt much of it was by fair means, undoubtedly some has been by high-handed methods and by such procedure as obtaining the surrender of a tenant's lands by involving him in debt. The result unfortunately is that *chakbandi* is too often regarded as a device of the landlord for improving his own position at the expense of his tenants. One revenue officer went so far as to say that *chakbandi* stunk in the nostrils of the tenants, and

until that feeling is overcome, as it can be overcome in time by fair and successful operations, it has to be borne in mind. It was declared in a meeting of the Board of Agriculture held last December, when I was President of the Board that *chakbandi* had made great strides in this tahsil. I find that statement greatly exaggerated. The village which was quoted to me as the best example of what could be achieved is Saragaon. I have not been able to visit it, but I have gone fully through the map and the papers with people who know the village. I find that though the operations have been aided by the fact that 25 tenants own small tanks and were consequently keen to get their land concentrated under the command of those tanks without going too minutely into calculations of the abstract values of the plots exchanged, still there has been consolidation in only 455 acres out of a total village area of 3,651, of which 3,134 acres is occupied and about 2,000 acres under rice In this village, as in the others which I have examined in the Janjgir tahsil there are legal difficulties which must be removed by legislation before free scope can be given even to the voluntary efforts of cultivators. I shall discuss those difficulties later on. In two of the three villages of the Janjgir tahsil which I examined where there has been partial *chakbandi* by private effort, I found that a good start had been made in remodelling the land. High class rice cultivation implies embankments which should contain areas of a flat surface as large as the lie of the land permits. If, however, holdings are scattered, the embankments have to be sited more according to the limits of the plots in the possession of the different holders than in accordance with the lie of the land. A good lay-out is therefore impossible. In these two villages I found that *chakbandi* had permitted a radical remodelling of the embankments so as to obtain the most advantageous lay-out. In one the work had been chiefly done by the landlord on the home-farm but in the other I found four go-ahead tenants who had spent between Rs. 2,000 to Rs. 3,000 on remodelling, including the building of small tanks on parts of their holdings to irrigate the rest of them.

8. Inthe Drug district, there are two most interesting villages which teach one a lot about the *chakbandi* problem. They are the villages of Matwari and Risama in the Drug tahsil. In Matwari the unaided efforts of the malguzars and the tenants have effected *chakbandi* completely in the sense that everybody's land has come into the scheme, but if there had been legal sanction and Government help behind the operations, the consolidation might have been more thorough. The following considerations go against the argument that the success achieved in this village proves that general success can be obtained without Government help and legislation. The village is a small one of 827 acres and is almost all of one kind of soil and that poor. There has, therefore, been little trouble about forming *khar*s. The tenants all live on the spot or in neighbouring villages and there happened to be no quarrels among them. The landlords are progressive men who live in the neighbouring village of Risama, and in Matwari their home-farm covers 213.27 acres As a result of *chakbandi* the number of fields, which was 2,934 when the village was last numbered and had since, mainly by family sub-division, risen to 3,651 has been reduced to 243, and the latter number would have been still smaller, had not legal difficulties prevented the lumping together under one number of some portion of the home-farm which though now contiguous are held under different rights, some being *sir* and some *khudkasht*. As the number of cultivators is 39, the average number of fields per cultivator has fallen from 98 to 8, but both the total figures include all patches of communal land, water-channels, roads, etc.. and unoccupied land, hence the present number of plots per cultivator is less than eight. The numbers 3,651 and 98 are probably both somewhat exaggerated, as the village has not been properly renumbered for a long time and a skilful renumbering in its unconsolidated state would have reduced both these figures somewhat. Still the contrast is striking. The simplification of the map and of the settlement and annual land record papers is thus obvious. The work of preparing these papers will in future not be one-tenth of what it was before. I found all the people very content with the new arrangements and had not the slightest intention of going back on them. The work of remodelling the fields by levelling superfluous embankments and reconstructing others so as to take the best advantage of the lie of the land has begun but it requires money and time and has not yet been carried through, but what I saw showed me that the possibility which *chakbandi* gives of preparing a really good lay-out of the land is one of its greatest advantages.

9. In Risama next door, which belongs to the same landlords and in which there is much home-farm, I found a very different state of affairs. Consolidation has been almost entirely in the home-farm, and for reasons which I could not get at the bottom fully during my short visit to the village but which were no doubt based on the

landlords doing their best for themselves irrespective of the rights and convenience of the tenants, the feeling against the landlords was very strong. From the purely agricultural point of view, however, the landlords have done excellent work for themselves. One large block of 242 acres has all been converted into home-farm. The landlords have taken the advice of the Executive Engineer for irrigation and borrowed the services of a sub-overseer who took the exact levels of the land. The fields were then remodelled according to the levels and reduced in number from somewhere about 100 to 19. In one part of the village some old small scattered rice fields and some adjoining waste lands had all been consolidated into one large rice field properly embanked of 25 acres, by far the largest rice field which I have ever seen. The work of remodelling was still going on, but landlords said that up to date they had spent Rs. 32,000 on improvement in both villages. This village also illustrated the legal difficulties which impede progress and which I shall now discuss.

10. While I consider that progress in the past would have been considerable, had a more persistent effort been made to overcome the difficulties of the problem, I am fully conscious of those difficulties They are both general and legal. The general difficulties are—

(1) The people are intensely conservative and have a low standard of comfort.

(2) For many reasons, one of which is that the rice crop, while it gives some concentrated work during the operations of cultivation and at the time of harvest, leaves the people with nothing to do for a large portion of the year, they are a great deal lazier than the people of the cotton tracts and considerably more lazy than the people of wheat tracts. Though this note gives indications of unaided progress, the mountain of inertia that has to be faced cannot be ignored.

(3) As already explained, there is a feeling that *chakbandi* is for the benefit of the rich man, usually the landlord, and to the detriment of the poor man.

(4) Having few intelligent interests, the people are prone to useless squabbling. The volume of civil litigation in the Janjgir tahsil, where voluntary progress has been greatest, was recently quoted to me as due to the absence of intelligent interests among the people.

(5) The landlords contain few men who are leaders of the people, such as are found in large numbers in, for example, the Narsinghpur district. Relations between the tenants and the rent-receivers who are the landlords are often very strained

(6) There are many *Satnamis* (reformed *Chamars* or leather-workers) among the people, whose efforts towards social uplift are taking the form of opposition to the Hindu castes. The existence of this large sect in the tenantry embitters relations among them and between the tenantry and the landlord. *Chakbandi* operations tactlessly conducted could very easily provoke a riot

11. The legal obstacles can be summed up in one sentence, that the law at present does not provide for the cultivators obtaining clear and undisputed rights in the land they receive in exchange in the process of consolidation The Land Revenue and the Tenancy Acts make some provisions for transferring rights in the land when exchanges are made, but those provisions are not full enough. It was suggested when the present Tenancy Act of 1920 was under consideration that it should provide more fully for exchanges, but in the end, as exchanges affect more than tenancy land, it was decided that the provisions in the first draft bill should be cut out as inappropriate in a bill regulating the relations between landlord and tenant. Section 2, sub-section (17), of the Land Revenue Act provides that where by any local custom land is liable to exchange or redistribution among the cultivators, land which is not *sir* land (home-farm in which no tenant rights can accrue) and which is taken in exchange for *sir* land, shall become *sir* land, and the *sir* land given in exchange for that land shall cease to be *sir* land. Rules under section 68 (2) provide that any land previously held by a *malik-makbuza* (plot proprietor) or tenant which comes into the possession of a proprietor in exchange for *sir* land may be recorded as *sir* land by the Settlement Officer, if he is satisfied that the two plots are of approximately the same value and the exchange is voluntary. They also provide that the Settlement Officer may declare to be *sir* any *khudkasht* land (temporary home-farm) received by any proprietor from another proprietor in the same *mahal* in exchange for *sir* land of approximately the same value. In both cases the *sir* land given in exchange is recorded in the right in

which the land taken in exchange was previously recorded. I have been informed that the word "exchange" here is capable of a broader meaning than that assigned to it in section 118 of the Transfer of Property Act, and may fairly be taken to include the interchange of *sir* and *khudkasht* rights in the land of one proprietor when in the interests of consolidation it is advisable to collect all the permanent home-farm into one block. Section 91 of the Tenancy Act provides that when a tenant holding land situate in a village in which the holdings of tenants are by custom liable to periodical redistribution and exchanging such land in accordance with such custom for other land situate in the same village shall be deemed to have the same right therein as he had in his former land, and section 92 provides for a tenant who ceases to hold any land and thereupon commences to hold other land of the same landlord, under circumstances from which it may be inferred that the tenant has accepted such other land in lieu of, or on the same conditions as the land which he has ceased to hold, shall be deemed to have the same rights as he had in his former land.

12. These provisions of the law by no means solve the legal difficulties of *chakbandi*. Land in a Chhattisgarh village consists of some or all of the following kinds:—

(1) *Sir* (permanent home-farm).

(2) *Khudkasht* (temporary home-farm in which any person who is allowed to cultivate it acquires under the law occupancy rights).

(3) *Malik-makbuza* plots (plots of land belonging in proprietary right to persons who are other than the proprietors of the village).

(4) *Milkiyat-sarkar* plots (plots of land of which the proprietor is the Government).

(5) Absolute occupancy holdings (tenants' holdings which carry a right of transfer).

(6) Occupancy holdings (land held in the commonest form of tenant right which does not carry a right of transfer).

(7) Village service land, *i.e.*, land held by village servants as remuneration of their work.

(8) Communal land (land set apart for purposes of the community). Much of this land, such as the village site and the burial ground would not be affected by any scheme of redistribution, but other plots, such as land set apart as standing ground for the cattle or as the place for skinning dead animals should come into the general scheme.

(9) Unoccupied land. This may be either cultivable or uncultivable. The former should come into the redistribution scheme and the latter out of necessity stands out.

(10) Land occupied by railways, main roads and Government irrigation channels.

It is essential that the law should provide for the free transfer of existing rights, including encumbrances, whatever they may be, which the scheme of consolidation necessitates. In addition to direct rights between landlord and tenant there are rights of reversioners which could be legally enforced to the undoing of attempts at consolidation, if it is not regularised by legislation. In one of the villages which I visited I found a tenant being threatened with a suit by his landlord for ejectment for illegal transfer of his land, the transfer being contemplated in a process of consolidation. As the law stands at present, the civil court would have no option but to find in favour of the plaintiff in this suit, and an heir or reversioner might similarly sue. At present, even when all the people concerned are completely satisfied with the transfers effected in consolidation, there is the grave objection that the land record staff has no authority to bring the land records into accordance with the new facts, and in some of the villages I visited I found that the only objection which the people had to consolidation was that, having accomplished it, they had not the protection which is given to them by an authoritative Government record of their rights. Legislation is, therefore, necessary to secure the people in their rights, even if the consolidation is voluntary, whether it is done by their own efforts or with the help of a Government agency.

13. Legislation is all the more necessary to compel an obstructive minority to fall in with the wishes of the majority. The Act passed in Baroda in 1920 provides for consolidation when two-thirds of the total number of holders in a village who own not less than half of the total cultivable land in it agree to consolidation. I have no infor-

tion how this provision has worked in Baroda, but in the Central Provinces we have in a way a parallel in the provision of the Canal Management Act of 1919, which provides that if the occupiers of four-fifths of an irrigated area desire to enter into an agreement for the supply of irrigation water, their will can be made binding on the remaining one-fifth. To adopt the Baroda rule in Chhattisgarh would be to ask for failure, as the proportion of the village to be held by the advocates of consolidation is too small, but I think that there should be a provision for a two-thirds majority prevailing over the minority, provided that that majority applies both to the cultivators and to the area held by them. A four-fifths majority would often be useless, especially as applied to the cultivable area, as one landlord with his holding already consolidated could successfully stand out against the wishes of all his tenantry, provided he held personally more than one-fifth of the area. I do not recommend this provision of compulsion as an instrument to be applied at once, but it shou'd be in the law to allow for the increasing demand for consolidation which will doubtless come when operations are successfully carried through in some villages A provision of the law allowing the officer-in-charge to decline to undertake consolidation if he thinks there are likely to be disputes and difficulties in carrying the operation through would prevent this section from causing trouble.

14. I shall indicate the provisions of law which, apart from substantive law, are necessary to regulate *chakbandi* procedure, by describing the procedure which I consider advisable in the field. There is unanimity of opinion among people who have thought about the subject that it is useless to expect the ordinary revenue staff to achieve substantial results. Past experience shows that they cannot do so. Apart from the volume of their work, which I consider sufficient but not excessive, their other duties prevent the concentrated attention which is necessary for success in consolidation. I therefore propose that there should be a special staff. To begin with I would start early next cold weather with one carefully selected Extra-Assistant Commissioner and give him a staff of five revenue inspectors. The Extra-Assistant Commissioner, who might be called the *chakbandi* officer, requires a reader on the ordinary lower division scale of clerks' pay and two peons Each of the revenue inspectors requires one chainman. If *chakbandi* is going to spread this staff is obviously insufficient, but it is quite enough for a start, as practical experience will teach us much as we go along and to attempt more at the beginning would be to spread mistakes which would be avoided if a start is made on a small scale and experience is gradually built up before an extended effort is attempted. It is impossible at this stage to indicate what staff may be ultimately required, but I hope that success will compel the employment of a large staff. The *chakbandi* officer should be allowed to select his villages himself. The careful selection of suitable villages to make a start on is very important They should be villages where everybody is anxious for consolidation, where the landlords are enlightened people and where there are no faction fights. They should be of moderate size and should not present too many difficulties of soils. They should be scattered over the Division so that each may serve, so to speak, as a demonstration centre from which *chakbandi* may spread. I found, for example, in Matwari that the people of surrounding villages were going to it and enquiring how the *chakbandi* there had been accomplished, as they would like to see it carried out in their own villages. The villages should be in or near areas commanded by Government irrigation works, either completed or under construction. I would start off with two in the Mahanadi area, two in the Tendula area and one in the Janjgir tahsil, either in or near to the area which will be commanded by the new Kharung project. Having selected his villages, the *chakbandi* officer should then decide how exactly he is going to proceed to suit the particular circumstances of each village. I give it as a general principle that a scheme of consolidation which is not theoretically perfect but to which everybody agrees is far better than one which, when worked out on paper, is the best that could be devised but which goes against the wishes of the people. The Baroda Act provides for the consolidation of holdings and then for giving out the new holdings by lot. I prefer to work on what I call the nucleus principle. It will usually be found that each tenant has some land which, on account either of its size or of its qualities, he specially prizes. The new consolidated holdings should be built up round these nuclei of land. Mr. Chhotelal told me that he adopted this method of work in 1905 and it promised success. It is the method which the people have adopted themselves. To carry it out requires more skill and patience than other methods, but it ensures contentment. To use the common parlance, it is better to have 14 annas consolidation and everybody content than 16 annas consolidation according to theoretical ideas of what is best and most people dissatisfied. Though the law

should not bar money payments between tenants to adjust inequalities of exchanges, they should be avoided so far as possible, as they will lead to elaborate and unsatisfactory valuations of land, whereas experience shows that the people are ready to yield something in abstract value for the sake of the convenience which a consolidated holding gives. When the consolidation officer has started the operations in each village, he can then leave the details for the time being to be carried on by the revenue inspector, who must of course be a specially selected man fitted by temperament to the work. He will travel round his villages and constantly check what the inspectors are doing and then go through the whole scheme when the work is finished in each village. The revenue inspector will come in again when the scheme has been approved and prepare the new map according to the consolidation and a new record of right, which should be checked and passed by the *chakbandi* officer. There should be a provision in the law for giving possession of the consolidated holdings by warrant. In discussing the problem with me, Mr. Chhotelal emphasised the necessity of not insisting on too early concrete results. A little patience at the beginning, resulting in a few villages well done and everybody content, will be much more satisfactory than telling the *chakbandi* officer that he must produce so much work per season.

15. Chapter IV of the Land Revenue Act provides an elaborate scheme of appeal, revision and review in all revenue matters. It is obvious that if a man has a right of two appeals, and sometimes three, in every petty revenue matter, he cannot have a more limited right in the most important matter of the taking away of some of his land and the handing over to him of other land. It is equally obvious that if appeals do occur at every turn, *chakbandi* operations will be a failure. While we cannot bar the right of appeal, we must minimise the chance of it by the careful selection of villages and careful work. The *chakbandi* officer must have a full right, for reasons to be recorded in writing, to reject any application for his help. It is quite probable that some applications will be made to him by one faction in the village simply to annoy the other. In other words, an attempt will be made to use him as a tool in faction fights. The sad history of the cases for the partition of villages is sufficient warning of how work, meant to further the smoother running of village economy, may be used as a weapon for bitter quarrels. Though I suggest that the law should contain a provision about compulsion, I would not use compulsion until experience has made us expert in the work. The *chakbandi* officer should work in each village with a panchayat consisting of himself, one representative of the landlords and three of the tenants. He should select these men himself, so as to ensure his obtaining men who will really help and who represent the different interests in the village. In particular the small tenantry should be represented. My experience is that a small man who has lived all his life in the village and has no interest outside it may have a very wide knowledge of the capacities of the land in the village and be a much more useful member of the panchayat than a man of more substance and education. When the *chakbandi* officer is visiting his other villages the revenue inspector should act as his deputy on the panchayat.

16. The question of determining under whom the *chakbandi* officer should work is important. I suggest that he should be under the Settlement Officer and the Settlement Commissioner. The Settlement Officer cannot do the work of consolidation himself, as his ordinary duties compel him to work against time on a carefully thought-out programme, but he has a familiarity in dealing with soils and maps which makes him more competent to scrutinise *chakbandi* proposals satisfactorily than a Deputy Commissioner without settlement experience. There is the difficulty, however, that a Settlement Officer is not always in the district. One will however be working in the Raipur *khalsa* area from next November, one in Bilaspur from November 1927 and one in Drug from November 1928. To get over this difficulty I would provide in the law for the proceedings being submitted to the Deputy Commissioner with a provision, as is already the practice in respect of some of the Deputy Commissioner's powers when a settlement is in progress, for the Deputy Commissioner's power being transferred to the Settlement Officer either of the district in which the village is situate or of an adjoining district. In time, when the work is stereotyped, the Deputy Commissioners may be able to assume the duties which I would now assign to the Settlement Officer. The Settlement Commissioner is better fitted by training than the Commissioner of the Division to control the work, unless of course the Commissioner has wide settlement experience, and if, as is possible, *chakbandi* spreads to the other Divisions of the Province, where the problem exists but is a great deal less pressing, his control will give the advantage of consistency. He should of course keep in touch with the

Commissioner of the Division. The transfer of the ordinary powers of the Commissioner under the revenue law to the Settlement Commissioner is a regular feature of revenue work. Nowadays too the ordinary executive duties of the Commissioner in connection with the management of town land are transferred, during the progress of a town settlement, to the Settlement Commissioner. The procedure, as authorised both by the law and by executive instructions, has worked quite smoothly, especially as it is laid down that the Settlement Commissioner, when acting under executive instructions, should not go against the wishes of the Commissioner without a reference to the Local Government. A further practical reason for putting the Settlement Commissioner in control is that for the next good many years much of his work will be in Chhattisgarh and he should be able to do his *chakbandi* work on or near the spot. I propose that instead of the usual procedure of allowing appeals and as a more effective substitute for it, the *chakbandi* officer should submit his proposals to the Settlement Officer for confirmation, with a statement, if any, of objections which he has not been able to remove. The Settlement Officer should send them on to the Settlement Commissioner only if he fails to effect complete agreement. It is not necessary for the Local Government to see the papers unless special application is made to it under circumstances similar to those under which a third appeal is allowed in ordinary revenue cases to the Local Government. My experience in dealing with partition cases strengthens my belief that the ordinary process of appeal would be fatal to consolidation operations. I have not yet met a member of the bar who has the familiarity with maps and village papers which renders him any help in a partition case. I do not blame the bar for this lack of knowledge. They have little opportunity of acquiring it, but I have had a pleader before me who, when examining the map of a village in which he was prosecuting a partition appeal, did not know the difference between a main Government irrigation channel and a village road. Appeals drafted by pleaders and presented in the ordinary way would simply confuse the issues, but each officer who had to send a consolidation case to his immediate superior should receive all objections and should analyse them before submitting the case for orders.

7. The opportunity of consolidation operations can be taken to effect other improvements in the villages besides mere consolidation. The straightening out of village roads and the provision of new roads so as to give access to all holdings and to tanks, grazing ground, etc., should be looked to, and where proper facilities do not now exist, adequate provision for communal purposes, such as the standing ground for cattle, the burial ground, etc., should be made. It should also be possible by agreement to provide for essential private watercourses between holdings.

18. When the scheme of consolidation is completely worked out, there should be an entirely new record of right. The new map will bear no resemblance to the old one and the village papers will be reduced in bulk to a fraction of what they were before. It is not enough simply to prepare fresh annual papers, as the village papers must be given the higher evidential value which belongs to a record of right. As, however, under the procedure I suggest, consolidation will have been done by mutual agreement and, if not based on complete agreement, will have been scrutinised by superior officers, there should be no provision corresponding to that in section 80, sub-section (1), of the Land Revenue Act, which provides for the institution of a civil suit for the cancellation or amendment of any entry within one year of a settlement. Such a provision would moreover be illogical, as the new rights in the village will be based entirely on the *Chakbandi* Act and not on previously existing rights, facts or customs.

19. The law should also provide for cultivators submitting for the approval of the *chakbandi* officer and his superiors their unaided efforts at consolidation, either complete or partial. When the results of this private consolidation have been approved, the *chakbandi* officer should have power to prepare a fresh record of right for the village or portion of the village affected, so that the cultivators may have the protection of the law.

20. There are very few ryotwari villages in Chhattisgarh but they should not be left out of the scheme of consolidation, especially as the most important one in the whole Division is Baloda Bazar, a tansil headquarters and commanded by the Mahanadi canal. This village was previously malguzari, but the malguzar's rights were bought out when the Baloda Bazar tahsil was established. Its holdings are now very scattered but are much less compact than if the village had been ryotwari all along. Near it there are two small ryotwari villages, also to be commanded by Government irrigation. There is some scope of consolidation in them. I have talked to the Tahsildar, Baloda Bazar, and to the *patels* of all the three villages and they are hopeful that consolidation can be carried out.

MR. CHHOTELAL AND MR. G. P. BURTON.

21. As is clear from this note, *chakbandi*, to confer full benefit, has usually to be supplemented by the remodelling of holdings. Remodelling costs money, and the Government should make it known that it will be prepared to give land improvement loans freely to people who want to remodel their land after consolidation. While it is quite proper that these loans should be given out on the recommendation of the *chakbandi* officer, they should be part and parcel of the ordinary work of administering land improvement loans. The loan account is one which can easily get into confusion, unless it is carefully administered, and all improvement loans, for whatever purpose granted, should be on the Tahsildar's books and he should be responsible for the collection of the principal and interest. I would allow no concession in the rate of interest, as different rates of interest mean a great complication in the accounts, but I would show leniency in fixing the instalments of repayment. This is no departure from established principle as it has already been recognised that the instalments of land improvement loans should vary according to the work for which they are taken.

22. Suggestions have been made from time to time that consolidation would be encouraged if the Government declared that the land revenue would be lowered or at least not enhanced at settlement in villages where it had been carried out. Stated in this crude form, the proposition goes much too far, but every effort should be made to avoid the suspicion that the land revenue has been increased because of consolidation. The general procedure about not assessing improvements should be followed. By keeping an old unconsolidated map of the village showing soils and positions, it is a simple matter to avoid enhancement on account of the improvements due to consolidation.

23. The Registrar of Co-operative Societies, speaking in the Board of Agriculture last December, gave little hope of co-operative societies in Chhattisgarh being able to help effectively in consolidation. I have therefore ignored them so far in this note, but a village where a healthy co-operative society has taught the people to work together should offer a promising field for consolidation, and the possibility of forming societies for financing remodelling after consolidation should be borne in mind.

24. This note does not pretend to be exhaustive. It merely embodies the ideas which I have formed since I went to Chhattisgarh as Commissioner in January. I propose now that it be discussed during the monsoon by a committee in Raipur, presided over by the Hon'ble the Revenue Member. The other official members should be the Commissioner of the Division, the Settlement Commissioner, the Legal Remembrancer and Mr. Chhotelal, Extra-Assistant Commissioner. As non-official members I would have all the Chhattisgarh members of the Legislative Council, rural and urban. It is advisable to have the urban members also so as to get all the elected representatives interested in this very important problem. To the strictly Chhattisgarh members I would add Sir S. M. Chitnavis, who represents the Nagpur and Chhattisgarh landholders and is himself a large landholder. I would add also two cultivators from each district to be nominated by the Local Government, who should be men with practical experience in consolidation. When the general principles and procedure have been thrashed out, work should be started in November, as suggested above, and the necessary bill prepared for presentation early in the new Legislative Council to be elected at the end of the year. If the legislation is passed in time for the second season's work, it would be quite early enough.

Oral Evidence

29094. *The Chairman*: Mr. Chhotelal, you are an Extra-Assistant Commissioner?—Yes.

29095. I understand you have been in charge of the scheme for consolidation?—Yes.

29096. In what district?—The whole Division, that is, Raipur, Bilaspur and Drug.

29097. Mr. Burton, I understand that it is agreeable to you that you should sit at the table and that you are willing to answer any questions that the Commission may put to you?—Yes, to the best of my ability.

29098. (*To Mr. Chhotelal*): I propose to ask you some questions first. Have you seen this document which has been placed before the Commission and is entitled 'Note on the Consolidation of Holdings in Chhattisgarh'?—Yes, I have seen it.

29099. Who drafted this note?—Mr. Dyer, Commissioner of the Chhattisgarh Division.

29100. Yes, I see that he has signed it in the capacity of Officiating Commissioner, Chhattisgarh Division. He points out that in 1905 Mr. H. M. Laurie, who was then the Commissioner, Chhattisgarh Division, attempted consolidation, and initiated a scheme which was discontinued in 1907 by the orders of the Local Government without any reason being assigned. Do you know in fact why the Local Government ordered the discontinuance of that scheme?—No.

29101. Then again in 1912 the Local Government itself took the initiative impressed, so this document says, by the success of certain experiments which had been attempted in Austria, but very little came of that scheme, is that so?—Yes.

29102. Now, when did the scheme that you are most familiar with come into being?—About a month ago.

29103. Nothing has been done in this direction since 1912; this scheme was started only a month ago: is that so?—The note was drafted last year, the conference was held in August, and then it was discussed whether there should be legislation or not. Then, in the month of November, I was ordered to start work and I started in December.

29104. Is it within your knowledge how long after 1912 the effort was persisted in?—(*Mr. Burton*) I was here at the time as Assistant Commissioner for a year; it went on for another year after that, so far as I am aware.

29105. It went on till the beginning of the War?—(*Mr. Burton*) Yes, it was interrupted by the War.

29106. You have read through this document?—(*Mr. Chhotelal*) Yes.

29107. And you agree with it?—(*Mr. Chhotelal*) Yes, I quite agree with it.

29108 I do not know whether you wish to say anything, Mr. Burton?—(*Mr. Burton*) I agree, generally. It was drafted after considerable enquiry by Mr Dyer, who was particularly interested in the matter, as Settlement Commissioner, and I think he has put together practically everything that has been done in these few pages. It was discussed by a conference held by Mr. Dyer in August, it was submitted to Government, and practically the whole of it was accepted by both the official and non-official opinion in the conference.

29109. It has been named *chakbandi* in this Province?—(*Mr. Burton*) Yes.

29110 In addition to these two successes that have been achieved in the Drug district, there have been two other villages where the experiment has been successful?—(*Mr. Burton*) That is in the next district; there it was done by a malguzar practically.

29111. That is not part of the 1912 scheme, nor the fruit of it?—(*Mr. Burton*) No.

29112. Mr. Dyer sets down ten different types of ownership or tenancy, and points out that in this multiplicity of systems lies the real obstacle to consolidation?—(*Mr. Chhotelal*) Yes.

29113. And he concludes from that that legislation, securing the people in their rights in their new holdings, is a *sine qua non* for an important spread of this movement?—(Mr. Chhotalal) Yes.

29114. I see that Mr. Dyer thinks that a two-thirds majority should prevail over the minority; do you agree with that?—(*Mr. Chhotelal*) Yes. (*Mr. Burton*) I think I should insist on rather a larger percentage than two-thirds.

29115. I was surprised to see, in the face of Mr. Dyer's remark on page 157 of the note, that a two-thirds majority should prevail, that he holds the view that the complicated system of appeal at present obtaining should, to some extent, be waived, because consolidation will have been achieved by mutual agreement and if not based on complete agreement, will have been scrutinized by superior officers, and that in adjusting the new record of right, there should be no provision corresponding

to that in section 82, sub-section (1) of the Land Revenue Act. Could it be said that a scheme which had been put into effect, in spite of the opposition of one-third of the owners, was a scheme which, in fact, had been achieved by mutual agreement?—(*Mr. Chhotelal*) Yes. The fact is that the work will be done by arbitration by the panchayat, and, when the representatives of the malguzar and the tenants have agreed to the *chakbandi*, the proceedings will be submitted for confirmation to the higher authorities, and the man who has any objection can very well object to the superior of the *chakbandi* officer. (*Mr. Burton*) For the peace and welfare of the village, I think it is desirable that a larger percentage should actually agree; the actual transfer would only affect the man whose field is to be altered.

29116. Would you be prepared to suggest the removal of the right of appeal?—(*Mr. Burton*) I think it is essential, if the work is ever to be completed in reasonable time.

29117 Mr. Dyer gives the staff which will be required. What staff is at present engaged on the work?—(*Mr. Chhotelal*) I have three Revenue Inspectors only.

29118. He suggests an Extra-Assistant Commissioner, who might be called the *Chakbandi* Officer, with a staff of five Revenue Inspectors, each with one chainman, and a reader on the ordinary lower division scale of clerks' pay and two peons for the Extra-Assistant Commissioner. Could important schemes be undertaken with a staff of that size?—(*Mr. Chhotelal*) No, that is only to start with; experimentally, I have taken only a small staff.

29119. Are you finding that there is a demand on the part of cultivators for consolidation?—(*Mr. Chhotelal*) Yes, there is a large demand.

29120. Is it a growing demand?—(*Mr. Chhotelal*) Yes. Of course, in every village the people are doing it more or less of their own accord, but all the tenants do not do it.

29121. How much propaganda has there been to popularise the idea? Has there been any propaganda?—(*Mr. Chhotelal*) There has been no propaganda.

29122. What about the attitude of the average malguzar; is he favourable to the idea?—(*Mr Burton*) I think one can say safely that he is the keenest really; one of the troubles is that the people suspect that the malguzar, with his influence, gets the best of the land.

29123. I see that attention has been drawn to the possibility of applying this scheme to the few ryotwari villages in Chhattisgarh; has anything been done in that connection?—(*Mr Burton*) I have just had that examined for Baloda Bazaar village, and Mr. Chhotelal thinks that it is a favourable case. They have a complete irrigation system, and it is hoped to introduce the *chakbandi* system without any difficulty at all, and then apply the watercourse system of irrigation, to have a complete model.

29124. Who is going to make the watercourses?—(*Mr. Burton*) As matters are at present, I should rather propose that Government should give a ryotwari village, an improvement grant for the purpose, just as grants are given for wells in out-of-the-way villages.

29125. Would that be administered by the panchayat?—(*Mr Burton*) No, it would be done by the Irrigation Department. The grant would be given by Government.

29126. And handled by the Irrigation Department?—(*Mr. Burton*) Yes.

29127. The Irrigation Department staff would actually make the minor watercourses?—(*Mr. Burton*) They would design them, and supervise the construction.

29128. But the usual thing in this Province, as elsewhere, is to leave the small watercourses to the villagers themselves?—(*Mr. Burton*) Practically none, as far as I remember, have been made. I may perhaps add that once Government gave loans for the construction of minor watercourses; recently I made enquiries about it and I found they had been fully constructed but had fallen into disuse and were being broken up again.

29129. Can either of you throw any light on paragraph 23, page 160, in which we are told that:

"The Registrar of Co-operative Societies, speaking in the Board of Agriculture last December, gave little hope of co-operative societies in Chhattisgarh being able to help effectively in consolidation". What argument did he use?—(*Mr. Burton*) I have not seen the papers, but I imagine he felt that they were not sufficiently influential to add much weight to the movement.

29130. He did not regard this as a promising field for the expansion of his department's work?—(*Mr. Burton*) I think they are fully occupied in rectifying their own affairs.

29131. Do you anticipate any difficulty in getting the necessary legislative acts passed into law?—(*Mr Burton*) I anticipate some difficulty, there will have to be amendments to the existing Revenue and Tenancy Acts.

29132. In order to make it possible to have a new record of rights after consolidation?—(*Mr. Burton*) I think the main difficulty is to transfer from one area to another the same rights that were held in the area originally by the owner

29133. And to attach all the weight of a record of right to the new holding?—(*Mr. Burton*) The right must go with the man who is the holder.

29134. Do you regard it, from your knowledge of these matters, as a feasible proposition, in the face of present conditions, to get this law passed?—(*Mr Burton*) I think we shall have the support of the local members in the Legislative Council.

29135. Would it be a very material contribution to the agricultural prosperity of the districts?—(*Mr. Burton*) There is no doubt about it.

29136. Are there any obstacles which are not suggested in this document or in your evidence that you care to tell us about?—(*Mr. Chhotelal*) No. (*Mr Burton*) The practical obstacle is the tremendous amount of trouble involved in the concentration of holdings so widely spread The map which is on the wall here shows the position after the first stage in a village Dumartalao; each colour represent a certain man's holding, it would be an enormous task to get them all together.

29137. *Mr. Calvert*: Have you attempted to work out the cost per acre?—(*Mr. Chhotelal*) No. As the work which is going on has been started experimentally, I cannot say what its cost will be when it is done on a large scale. I had a lot of trouble in the beginning to persuade the people first to let me start the work When I started work certain people objected to having it done in the manner in which I was doing it. I explained matters to them, and then they came round and agreed to my proposal. In this way, it took a lot of time. The first village in which I started took a lot of time, but as the work progresses it will take less.

29138. We had a party from this Province which came to the Punjab to see the consolidation work being done there, you were not a member of that party, Mr. Chhotelal?—No; Rao Bahadur Jagannath Prasad was a member of the party.

29139. Do you not think it would help your work if you saw what is being done there?—(*Mr. Chhotelal*): Yes, it would be a great help to us, and we should gain some experience by seeing what is going on there. I have been told, however, that in the Punjab the villages have uniformity of soil. Here, the soil varies from block to block, sometimes it is in patches, and black soil may be found close to murum soil at a very short distance. The people attach importance to the superiority and inferiority of the soil, and they want to hold on to it; they do not want to make exchanges in different kinds of soils.

29140. You will find that passing away in time. How much have you done so far?—(*Mr. Chhotelal*) I have finished one village.

29141. How much time did it take you?—One month.

29142. *Prof. Gangulee*: What is the area of the village?—(*Mr. Chhotelal*) The total area is 1,000 acres, but the occupied area is about 485 acres.

The Chairman: In case you misunderstand Mr. Calvert's mind on the matter, I may tell you that he is astonished at the speed at which you are doing it.

29143. *Mr. Calvert*: For 1,000 acres, we might take anything from 6 months to 2 years for consolidation ?—(*Mr. Chhotelal*) Consolidation has been attempted; it is not yet complete.

29144. It is not in one block ?—(*Mr. Chhotelal*) No.

29145. You are satisfied by getting a single man's holding down to several blocks Could you not get them all down to one block ? (*Mr. Chhotelal*) It cannot possibly be done if a single man disagrees with it; nobody will agree

29146. What guarantee have you against the consolidation being upset in case of a dispute subsequent to the completion of the work ?—It will not be upset when it is legislated for and when the civil court will have no power to alter the *chakbandi* or the record of rights which I shall prepare.

29147. At present you have no guarantee at all ?—No; nothing.

29148. Do you get the persons concerned to sign an agreement of arbitration in cases of dispute ?—I am thinking of it, but for the present I am working on the line that everybody should agree to it.

29149 Do you not think it will be safer to get them to agree to refer disputes to an arbitration ? Yes; it will be necessary.

29150. Page 156 of the note refers to a case in which a landlord threatens the tenants with a suit for ejectment and so on. "As the law stands at present, the civil court would have no option but to find in favour of the plaintiff". Do I understand that the civil court would not throw out the suit on the ground that it is opposed to public policy ?—(*Mr. Burton*) It gives the landlord a right to apply in the event of a illegal transfer, this is under the Tenancy Act.

29151. It is not a general rule of civil courts not to support any claim which is opposed to public policy ?—I have not much experience of civil courts; but this is under the Tenancy Act

29152. Would you kindly let me know what is the difficulty about the alteration of the land records referred to at the bottom of the same page of the note · "the land record staff has no authority to bring the land records into accordance with the new facts"?—(*Mr. Chhotelal*) Yes, because the rights are not easily transferable from field to field.

29153. On page 157 it is stated that these villages should be selected in such a manner that "they should be scattered over the Division so that each may serve, so to speak, as a demonstration centre from which *chakbandi* may spread". Is that the policy you are following ?—Yes, I am going to follow it later on when I have the trained staff. I am training the staff first of all and finding out an easier method of getting on with the work.

29154 Do you not think it is better to concentrate on one particular neighbourhood ?—Yes; I am working in one neighbourhood.

29155. I presume this consolidation once started will continue for 200 or 300 years ?—I do not think it will take 200 years.

29156. There are 34,000 villages to-day ?—In some cases people may agree to do it by themselves later on.

29157. Is there any proposal to put this work under a Settlemet Officer; has that been the policy now ?—Yes; I am working as *Chakbandi* Officer for the present and my proceedings will be submitted to the Settlement Officer for confirmation.

29158. Do not the people regard the Settlement Officer with some suspicion ?—I do not think so. I was an Assistant Settlement Superintendent and I started the work under the Settlement Officer and I was hopeful that the work would be successful if I had not been removed from it. I was put on to another work and this work was stopped. But it was not through fear of the Settlement Officer that I could not carry on the scheme.

29159. You do not think the people connect the Settlement Officer with an increase of revenue ?—It is not so much the fear of increase of land revenue.

29160. It is linked up with the Settlement Officer's work ?—I do not think so.

29161. Then in paragraph 17, page 159, various other improvements are suggested. Is there not a danger of overloading your scheme by too many other improvements?—No; these things will be done in the ordinary course, *i.e.*, the pasture grounds and watercourses; I have nothing to do with them. My consolidation of holdings will automatically bring about these improvements.

29162. You do not think you are making it too difficult?—No.

29163. In the case of a minor owner are you accepting agreement by his guardian?—So far I have not come across a case like that. But when the Act is passed I think it will not be necessary to take the acceptance of anybody for the consolidation of the holdings, that is, when the Settlement Officer has confirmed my proceedings. The question of reversioners is likely to arise but that is a question which should be decided by the civil court and the civil court will be barred from taking cognisance of anything which is against *chakbandi*.

29164. Do you really think that it will be advisable at this early stage to provide for any form of compulsion by any majority at all?—Yes; of course, for the present it is desirable because I shall be getting the work done sooner if I am allowed to work by compulsion.

29165. Who do you think will make the most noise, the 99 people whom you please or the one whom you displease? The one displeased will cry far louder than the 99 whom you please?—Of course there will be a certain amount of protest But who would hear one man's cry and what can one man do? In a village when 99 persons agree and one disagrees, the village will say that that man is out of his senses and people will not mind it.

29166. *Mr. Kamat*: Just as you are of the definite opinion that consolidation by voluntary consent is rather a precarious thing and uncertain, also a slow process, are you also of the opinion that even by co-operative methods consolidation is equally slow and uncertain?—I do not think that it will be successful by the co-operative method here because the co-operative man has got no knowledge of soil classification, no knowledge of agriculture and no experience of agriculture, and he cannot understand things properly at all while making the adjustment of the areas of the different holdings.

29167 In short, therefore, you rule out the co-operative method and fall back upon legislation?—Yes.

29168. I want to ask you whether according to your experience certain guiding principles are not necessary for consolidation?—Yes; certain guiding principles are necessary.

29169. In the first place, when you consolidate land, is it not necessary to have for your guidance a certain standard unit of acres suitable for each tract; say, 10 acres or 15 acres or even 5 acres according to the nature of the soil and so on, below which you should not have any holding unconsolidated?—Yes

29170. How are you going to fix this standard unit below which you ought not to go?—This unit cannot be fixed because the holdings vary in size. Certain holdings are of one-tenth of an acre, certain holdings are of 50 or 200 acres. Of course when the tenant has got one field of a large extent there is no need for consolidation; it will stand.

29171. So you are not particularly concerned with the size of the holding?—No particular size is fixed.

29172. The whole thing is arbitrary?—Yes.

29173. Then again, do you not think you ought to lay down another principle when you redistribute your plots? For instance, a neighbour to you who has already got a certain plot may desire a contiguous plot to add to his holding; should he not have the first right, the right of pre-emption so to say?—No; that would be very difficult; it was never the custom and it is not possible.

29174. Supposing there is a strip of land close to my land for which I am prepared to pay any price I should naturally have the first choice; yet according to your system the panchayat or the officer in charge gives that strip of land to somebody else; is that equitable?—Yes; that will be equitable if the panchayat finds out an area of equal value.

29175. I doubt whether that is a sound system and whether, if you have legislation, the Legislative Council will support an idea whereby a single individual officer arbitrarily distributes the strips, not giving the preference to the neighbours who wish to take them up?—That does not depend upon the individual officer. There will be three representatives of the tenants, one representative of the malguzars and the fifth will be the Government officer entrusted with preparing the records.

29176. When you say that two-thirds of the people of the village should prevail over the remaining one-third, do you mean two-thirds of the owners or two-thirds of the cultivators?—Cultivators having in their possession two-thirds of the occupied area.

29177. That is to say two-thirds of the vested interest in the land?—Yes.

29178. Not two-thirds of the number of owners?—No.

29179. Then again if you have consolidation elaborately and systematically carried out, do you not think that people should have greater opportunities to ventilate their grievances, for instance that you should have a higher authority over the consolidation officer in the shape of a tribunal?—Of course there is no objection to having a tribunal or a court over the *Chakbandi* Officer; but the thing is this: if one man appeals and his holding is changed by the appellate court then the whole *chakbandi* will have to be upset.

29180. My colleague, Mr. Calvert, has drawn your attention to the fact that, if things are left to the Settlement Officer, probably the people will not be satisfied or the judgment of one single man may not be able to satisfy all. Do you not therefore think it is necessary to have a tribunal constituted so that any man may have an opportunity to place all his grievances before it?— Of course, it is necessary.

29181. Are you conversant with Town Planning Acts?—No; I am not.

29182. Do you know the principles of town planning and the redistribution of residential plots at various stages, the opportunities given to the people concerned, in the shape of notifications by the Government, that a particular scheme is framed. A particular scheme would be framed, a draft map of the distribution made, and complaints invited at different stages from the people concerned, so as to give the people an opportunity of claiming particular plots. Would you have an elaborate system of that sort so that every tenant could put his proposals before the consolidation officer?—Yes, every tenant should have the opportunity.

29183. And, supposing after redistribution of all the different plots, an undesirable uneconomical fragmented plot remained on hand, could there be a procedure by which its money value would be fixed either by the consolidation officer or by a panchayat and that money value paid to the owner of that small plot?—No, that will not be possible at least for the next forty or fifty years.

29184. But if there were a plot which was too small to be tacked on to any of the other holdings, it would be desirable to value it in money, and either to distribute that money among the different shares or to give it to one man; do you not like that idea?— No; the people here are very conservative and they do not like to part with a field; whatever sum is paid, the owner will not be satisfied.

29185. But otherwise, according to your own ideas, that little plot would remain a more or less uneconomic plot?—It may be, but I would allow it to stand over, in order to make my *chakbandi* operations more popular.

29186. *Dr. Hyder*: In the Chhattisgarh Division, are the plots of the landlords or malguzars also scattered about?—Yes.

29187. The *sir* and *khudkasht* plots?—Yes.

29188 It appears to me that according to the different sections of the Tenancy Act and the Land Revenue Act the law is on the side of consolidation?—Yes.

29189. So that there should be no difficulty?—No, but the law is not sufficiently strong and clear to effect a general *chakbandi*. In particular cases of exchange between two tenants, when they want to exchange a field, they do so with the permission of the landlord; but if the malguzar objects to the exchange proposed between the two tenants, it cannot be done.

29190. In the Chhattisgarh Division, have you this system of redistributing land at certain intervals?—Before 1882 there was a general custom of redistribution; that was the *lakhabhata* system.

29191. Is that *lakhabhata* system now obsolete?—Entirely obsolete; since 1882 no village has been redistributed.

29192. With how many rights would you have to reckon: would you have to reckon with the *sir* right, the *khudkasht* right, the *malik-makbuza* right, the right of absolute occupancy, and the right of limited occupancy?—Yes.

29193. Those other matters which are mentioned in Mr. Dyer's memorandum are not very important?—No.

29194.—You could deal with the *sarkar* as you liked?—Yes.

29195. You could deal with the communal lands; they would not give you much trouble, you are not going to consolidate them?—No, but sometimes the people want a small part of the communal land to be included in their holdings and to give in exchange part of their holdings for communal land.

29196. Do you mean to say they do not have a communal burial or burning ground here?—No, by communal land I mean pasture land. Certain land is reserved for burial ground.

29197. There would be no difficulty in regard to that?—No.

29198. It seems to me there would be only four rights with which you would have to reckon: *sir*, *khudkasht* and the two kinds of tenancy rights?—Yes, and *malik-makbuza*.

29199. Have you in your villages large areas of service land?—A very small area.

29200. Allotted to the village headman?—Not the headman, but to the village servant: the village watchman.

29201. *The Chairman*: On page 159 of the note it is said that the Land Revenue Act provides for the institution of a civil suit for the cancellation or amendment of any entry within one year of a settlement. Does an appeal lie from a first decision in that case?—Yes, an appeal against the decision of the civil court.

(The witnesses withdrew.)

The Commission then adjourned till 2-30 *p.m. on Thursday, the 20th January, 1927, at Nagpur.*

Thursday, January 20th, 1927.

NAGPUR.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.
Sir JAMES MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E., I.C.S.
RAJA SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO OF PARLAKIMEDI.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Mr C. U. WILLS, I.C.S.
Sir SHANKAR MADHO CHITNAVIS, KT., I.S.O } (*Co-opted Members*)

Mr. J. A MADAN, I.C.S
Mr. F W. H. SMITH. } (*Joint Secretaries.*)

Mr. C. M. TRIVEDI, I.C.S., Registrar, Co-operative Societies, Central Provinces and Berar.

Replies to the Questionnaire

QUESTION 22.—CO-OPERATION.—(*a*) (i) I am of opinion that Government should take the following steps to encourage the growth of the co-operative movement in this Province —

(1) Besides the Registrar, the superior staff of the department consists of one Senior Deputy Registrar of the rank of Deputy Commissioner, one Junior Deputy Registrar of the rank of Assistant Commissioner and three Circle Officers on a special cadre on Rs 250—25—600. The Province has been divided into four Circles, each of which is in charge of a Junior Deputy Registrar or a Circle Officer. The number of Central Banks, registered primary societies and societies under liquidation is as under :—

	Banks.	Societies.	Societies under liquidation.
Circle Officer I ...	8	1,121	132
Junior Deputy Registrar ..	13	788	50
Circle Officer III	9	1,112	163
Do. IV	7	1,143	190

The Junior Deputy Registrar is in charge of Berar, in which Division the volume of business of banks and societies is greater than in the whole of the Central Provinces and in which future development is likely to occur both in respect of credit and non-credit co-operation, and it is not possible to allot him more banks and societies. The Circle Officers in the Central Provinces cannot efficiently supervise the banks and societies in their circles, particularly as the movement is not in a flourishing condition in the Central Provinces and the reorganisation of societies now in hand makes it incumbent on them to devote more attention to the affairs of societies than in the past. It is not possible to place the Senior Deputy Registrar in charge of a circle as a permanent measure, though in order to give much needed relief to Circle Officers in the Central Provinces, I have placed him temporarily in charge of three banks and about 500 societies It is therefore desirable to increase the number of

circles from four to five. There is already a sanctioned post of a Junior Deputy Registrar of the rank of Extra-Assistant Commissioner, but the Legislative Council cut out the provision for the post in 1922, and since then no budget provision has been made for this post.

(2) A characteristic feature of the Central Provinces system is that the important duties of education and supervision of primary societies are entrusted to Central Banks. All co-operators are agreed in thinking that the deterioration of the movement in the Central Provinces is largely due to the fact that Central Banks have not been able to perform these duties adequately. It was expected when the movement was initiated in the Province that ultimately the banks would be managed entirely by rural directors from members of societies. For various reasons, however, the control remained with the urban directors who were not in a position to keep themselves in touch with rural conditions. They concentrated their attention on the financing of societies, and so long as collections were good did not trouble themselves about the education of members in the principles of co-operation Further, it must be recognised that the urban directors are generally busy professional gentlemen who cannot be expected to pay constant visits to distant villages in the mofussil and to supervise and instruct societies. This important work has therefore tended to fall in the hands of the banks' paid staff which is often inefficient if not insufficient, ill-trained and ill-equipped for the task, though it may be mentioned that for the last two years efforts are being made to train them by holding training classes in the rains for about three weeks. In the Central Provinces, a Co-operative Institute has been organised for the Jubbulpore and Nerbudda Divisions. Twelve Central Banks together with their affiliated societies out of fourteen Central Banks are members of the Institute. The Institute is financed by contributions from banks and societies at 3 annas and 1 anna per Rs. 100 of their working capital and by a grant of Rs. 3,000 from Government. Its aim briefly is to develop the co-operative movement and to organise, conduct and supervise the education of members in the principles and practice of co-operation. It has a staff of twelve local Instructors who give lectures illustrated by magic lantern slides in villages and do such other work as may be entrusted to them by banks The future of this body is yet uncertain, since it is not adequately supported by Central Banks. Supervision of societies cannot be made over to such an organisation at present. Besides, there are no Institutes in the Nagpur and Chhattisgarh Divisions A scheme has therefore been evolved with the support of all co-operators in the Central Provinces under which—

(i) Circle Auditors in the Central Provinces would be relieved of the work of audit and entrusted with the duty of education and supervision of societies and their reorganisation in co-operation with Central Banks and the Institute

(ii) The present number of Federation Auditors would be increased and their pay improved. The staff would be under Registrar's control.

(iii) The Federation subscription of one rupee which is levied from every member of a primary co-operative society in the Central Provinces would be abolished

(iv) The present system of writing of accounts by society *mohurrirs* would continue for the present, but efforts would be made to induce literate members to write the accounts of societies.

(v) The funds for audit by Federation Auditors and for the writing of accounts would be provided from (i) contribution from the profits of societies not under liquidation at 40 per cent of profits, (ii) half the amount of interest on the accumulated reserve funds of societies under liquidation and (iii) half the interest on the accumulated reserve funds of Central Banks.

Calculations show that there will still be deficit of about Rs 20,000. It is not possible to meet this by increased contributions, because the scale proposed for contributions from societies and banks is already very high. It is therefore proposed that Government should meet the deficit. This is only reasonable. The Central Provinces and Berar spend far less on co-operation than any other major Province. Under this scheme, it may also be necessary to increase the number of Government Auditors. Conditions in Berar are different. Whereas the number of primary credit societies has decreased in the Central Provinces during the last five years, it has increased in Berar. The average Berar peasant is more intelligent than his Central Provinces confrere, and Directors, both urban

and rural, take greater interest in the co-operative movement. An Institute has been organised for Berar and all the banks and about 500 out of 758 societies are affiliated to it. The Institute is financed by contributions from profits of societies and Central Banks at 15 per cent and 7½ per cent, respectively. The Institute has a staff of 1 Inspector and 9 Assistant Inspectors, and its affairs are managed by an enthusiastic standing committee. It conducts a magazine, publishes pamphlets and holds rallies and training classes, and its Assistant Inspectors visit societies in consultation with Central Banks. It is expected that the societies which have not yet joined the Institute will do so shortly. The Institute is doing good work, but the need for more supervision of societies in Berar is great in order to avoid the deterioration that has set in in the Central Provinces. One solution is to increase the number of Assistant Inspectors; another is to entrust the audit of societies to another agency and to release Circle Auditors for the work of supervision of societies The matter is under discussion with the Institute and Central Banks, but should there be any financial difficulties in the way of the adoption of a scheme for the more intensive supervision of societies, I think Government should be prepared to make a grant to the Institute.

(3) The land tenure in the Central Provinces under which occupancy tenants cannot lease their holdings for more than a year, or cannot mortgage or sell them is an obstacle to the growth of the co-operative movement. This subject is outside the scope of the Terms of Reference, otherwise I should have liked to suggest that the Tenancy Act should be so amended as to make occupancy holdings mortgagable and saleable in favour of co-operative societies

(4) The question of the organisation of land mortgage banks in Berar is under consideration. In the earlier stages, a certain measure of assistance from Government is required, and a guarantee of interest by Government for a certain period would be of the highest importance In the initial stages, Government should also make a contribution towards the cost of valuation of land which would be mortgaged to a land mortgage bank.

(5) To facilitate the transmission of money by money order between Central Banks and societies, Government should refund three-fourths of the money order commission as in the Punjab, Bombay and the United Provinces

(*a*) (ii) Non-officials, both rural and urban and specially the latter, have rendered valuable services in the past in organising primary societies, Central Banks, the Provincial Bank, the Institutes and the Central Provinces and Berar Co-operative Federation and have devoted much time and attention to the management of central institutions. Without their assistance it would have been impossible to develop the co-operative movement in this Province, and a word of tribute is due to several non-official gentlemen who at the sacrifice of time have laboured and continue to labour in the cause of co-operation. If the non-official agency has not been able adequately to supervise the working of primary societies, it is largely because too much was expected of honorary workers. If, as a result of experience, it is proposed to transfer the supervision of societies largely to Government Auditors, it must not be supposed that there will be no place for honorary workers or non-official agencies in the co-operative movement in the Central Provinces. If any honorary workers or agencies come forward to supervise, educate and reorganise primary societies, their assistance will only be too welcome. The movement cannot have too many disinterested workers. In my case, non-official agency is indispensable in the management of the affairs of Central Banks, the Provincial Bank, the Institutes and the Federation. Non-officials and non-official agencies like the Institutes or Central Banks can also render valuable help to the movement by organising divisional, district, taluk or tahsil conferences and by conducting rallies of co-operative societies which are now being held throughout the Province. They can also organise training classes for members of primary societies. They can assist in the diffusion of co-operative ideas by means of lectures, pamphlets and magazines. The co-operative movement in the Province will be all the stronger for the support of non-official workers and non-official agencies.

(*b*) (i) *Credit Societies.*—There are in this Province 4,071 agricultural credit societies with unlimited liability of which 3,313 are in the Central Provinces and 758 in Berar. The working capital of these societies amounted to Rs. 155 lakhs on the 30th June 1926 and loans to members stood at Rs. 132 lakhs on that date. The number of members in the Central Provinces was 49,000 and that of societies in Berar 11,360. Loans are generally advanced to members at 12 per cent. The extent of financial help rendered to agriculturists by these credit

societies during the last three years will be gathered from the figures of cash loans given below:—

	Central Provinces (000 omitted).	Berar (000 omitted).	Total (000 omitted).
	Rs.	Rs.	Rs.
1923 24	7,54	17,44	24,98
1924-25	9,44	25,62	35,06
1925-26	11,76	17,99	29,76

Most of these loans were for current agricultural purposes, *e.g.*, purchase of seed, bullocks, or petty land improvements, weeding or harvesting, but in Berar loans have also been advanced for the purchase of land, the redemption of old debts and household and ceremonial expenditure. Generally, however, the finance provided by these societies is short-term finance and credit societies, largely depending, as they do, on loans from Central Banks which in turn derive their funds from deposits for one to three years, cannot provide long-term finance. In some societies, members borrow from outsiders, partly because societies do not finance them for all their needs and partly because the members have not been properly educated in the use of credit. The movement is in an unsatisfactory condition, particularly in the Central Provinces, and efforts are being made to weed out bad societies and bad members and to reorganise societies not past hope largely through Government Auditors and partly through the staff of banks. The movement will contract still further in the Central Provinces for sometime, but there is no ground for pessimism. With proper supervision and steady perseverance in educating members in the principles and practice of co-operation through rallies, taluk or tahsil conferences, training classes and the introduction of a share-system which has been promulgated recently, the movement will improve. There are 33,000 and 5,800 villages in the Central Provinces British districts and Berar respectively, and there is great scope for the development of credit co-operation amongst agriculturists. But fresh organisation must be undertaken on sound lines, and care must be taken to free it from the defects associated with it in the period of expansion. For the present, the energies of all co-operators, official as well as non-official, must almost wholly be concentrated on consolidation, especially in the Central Provinces When the condition of existing societies has improved, there will be time to think of expansion.

(iii) *Societies formed for the sale of produce or stock*—The question of the formation of cotton sale societies in Berar has been under investigation for some time, and there are three such societies, two of which have been registered recently. Members and non-members bring their produce to the societies. It is sold for them on a commission basis, and a rebate is given to members at the end of the year. In spite of the existence of cotton markets in Berar, malpractices occur frequently, and cotton sale societies would be of economic advantage to the agriculturists in that they would secure honest weighment and the correct assessment of deductions for inferior or damaged cotton. These societies have not yet passed beyond the experimental stage, and it is proposed to observe their working for some time before organising more societies of this type in Berar It must be emphasised that efficient business management and loyalty of members are essential pre-requisites for the success of such societies.

Co-operation for sale is an advanced form of co-operation and can only flourish in areas where co-operation of simpler forms, *e.g.*, credit, has succeeded. In the Central Provinces, Bilaspur district is one of the few districts where credit co-operation is doing well, and it is intended to examine the question of the formation of some societies for the sale of rice in that area.

The co-operation of the Agricultural Department is necessary both in the formation and subsequent working of sale societies. This fact is fully recognised by both the Co-operative and Agricultural Departments in this Province, and it has been decided to depute an Agricultural Assistant for three years to one of the societies in Berar to help it in management and propaganda.

(v) *Societies formed for the aggregation of fragmented holdings and their redistribution in plots of reasonable size*—The evil of fragmentation is very serious in the Chhattisgarh Division and is a formidable obstacle to any advance in agricultural practice. In Raipur and Drug districts, attention must for sometime to come be devoted to the improvement of credit societies, but in Bilaspur district, co-operative societies for the consolidation of holdings can be formed on the lines followed in the Punjab. As soon as legislation providing for transfer of rights in existing holdings to redistributed holdings is enacted.

an attempt will be made to organise some societies for the consolidation of holdings. In the meanwhile, the Central Bank is conducting some propaganda with a view to popularise the idea.

(vi) *Societies for the co-operative use of agricultural machinery.*—There is scope for such societies in Berar and perhaps in the Nagpur Division, but the question has not been examined by the Co-operative Department. The activities of Agricultural Associations in Berar have been mainly confined to the selling and hiring of ploughs. Labour is comparatively dear in Berar and I believe labour-saving appliances would be welcome. I think the question should be investigated by the Agricultural and Co-operative Departments. The essentials for success would seem to be:—

(i) A ready supply of spare parts and fittings
(ii) Inspection of and advice regarding replacement of the wear and tear.
(iii) Willingness of central financing agencies to help such societies with funds at reasonable rates of interest

(vii) *Societies for joint farming*—I think this type of co-operation is too advanced for this Province, and the want of mutual confidence amongst members might be the rock on which such societies may founder, but it is worth while making an experiment.

(viii) *Cattle-breeding societies.*—There are at present no cattle-breeding societies in the Province. Two cattle-breeding societies were formed in the Raipur district in 1913-14. The members were mostly landowners who purchased a share of Rs. 100 each. Good cows were purchased for members with the help of the Agricultural Department, and suitable bulls were also supplied by that department at nominal prices. Each member was allowed to keep not more than six cows A large area was given on lease by Government for grazing purposes on very favourable terms. These societies had, however, to be closed down, as members did not take sufficient interest in them.

(ix) *Societies formed for any purpose connected with agriculture or with the betterment of village life, but not specified above.*—Co-operation can be utilised as means of education and social reform. It is desirable to form societies for compulsory education, for reducing ceremonial expenditure and for arbitration of disputes But a good deal of propaganda is necessary before such societies can be organised and worked successfully. It is in respect of propaganda in such matters that non-official agencies can be of great use. The assistance of caste and village panchayats would be of great help in the development of this type of co-operation.

(*c*) I understand the question to mean whether legislation should be introduced to compel a small minority to join as members in co-operative societies for joint improvement. If so, my answer is in the negative. If there is compulsion, co-operation, of which voluntary association is an essential feature, ceases to be co-operation. I have, however, no objection to legislation compelling a recalcitrant minority to join in schemes of joint improvement, provided such schemes are not brought within the scope of the Co-operative Societies Act.

(*d*) Primary credit societies have enabled their members to obtain loans from them at cheaper rates of interest than from other sources, and in villages in which co-operative credit societies are working fairly well, the local moneylenders have reduced the rates of interest charged by them. In many of the societies I have visited, some members have been able to pay off their debts and increase their assets, *e.g.*, land, bullocks or to improve their land. The spirit of self-help and mutual help has been fostered to a certain extent. On the other hand, only a few societies have succeeded in securing deposits from members and non-members. Such deposits in societies amount to Rs. 5 lakhs, although it may be mentioned that the share capital held by members of primary societies in Central Banks totals Rs. 11 lakhs. In many societies, neither the panchayat nor the members fully realise their responsibilities. The scrutiny of the purposes of loans and the watch over their subsequent employment are not very thorough. Unpunctuality in repayment is a frequent occurrence.

The Provincial Bank and Central Banks have succeeded admirably in attracting the savings of middle classes, and deposits in the Provincial Bank and Central Banks amount to Rs. 32 lakhs and Rs. 95 lakhs, respectively. Thus, even outside the membership of societies, the movement is proving of value in the encouragement of thrift and the accumulation and circulation of capital for economic purposes.

MR. C. M. TRIVEDI.

Oral Evidence.

29202. *The Chairman:* Mr. Trivedi, you are Registrar of Co-operative Societies in the Central Provinces?—Yes.

29203. You have given the Commission a note of the evidence which you wish to give. Do you desire to make any statement of a general character at this stage?—No, I do not desire to make any such statement at this stage.

29204. Would you please give the Commission a short account of your own experience in the co-operative movement? When did you first join?—I joined as Deputy Registrar in January 1924 and I continued as Deputy Registrar till June 1925. In June 1925 I was appointed to officiate as Registrar, Co-operative Societies, and I continued in that post as Officiating Registrar till March 1926. Then I went on leave and I returned from leave in the middle of November last.

29205. Had you any experience of the movement prior to 1924?—No, I had not any cosiderable experience. I merely came across some co-operative societies in my capacity as Sub-Divisional Officer in the Raipur district. I must have seen about 7 or 8 societies.

29206. If there was any lack of experience it was of course not in any way due to your own action. But have you found such lack of experience any disadvantage in discharging your duties?—Not at present. In the beginning I had to pick up the work.

29207. You did the best you could as you went along?—Yes. I started work actually in the field when I went out on tour at the earliest opportunity after joining as Deputy Registrar.

29208. What was the name of the officer whom you succeeded?—Mr. Roughton.

29209. I think it would be well if we run through, before we turn to your printed note of evidence, some of the information provided in the provincial memorandum which is entitled *A Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar.* The movement I think was inaugurated in 1904?—Yes.

29210. By 1911 there were seven Central Banks with deposits amounting to Rs. 1,24,520 and a working capital of Rs. 1,74,516. 300 primary societies existed at that time in which there were 9,542 members and those 300 societies had a working capital of Rs. 5,00,000. Is that correct?—Yes.

29211. Then your Provincial Co-operative Bank was organised in order to provide a link between the Central Bank and the money market? Did you prepare the memorandum?—No, my predecessor prepared it.

29212. Have you read it through?—Yes.

29213. Is it correct in its facts?—Yes.

29214. Does paragraph 57 on page 22 of the aforementioned memorandum give the Commission an insight into the full extent of the seriousness of the present position?—Yes, that is a true enough statement of the present position of the movement.

29215. How many societies have failed altogether? I am not sure whether this is mentioned here or not?—Up to date?

29216. Yes?—I have got a statement here. The number of primary credit societies that have been cancelled up to date since the beginning of the movement is 1,452.

29217. And in the past 12 months?—Up to the 30th June 1926, *i.e.*, from 1st July 1925 to 30th June 1926, 191 primary agricultural credit societies with unlimited liability have been cancelled.

29218. Have there been cases in which the acts for which individual members were liable under the system of unlimited liability have been insisted upon?—Yes, joint liability has had to be enforced.

29219. And payments claimed and made?—Yes.

29220. What effect has that had on the reputation of the co-operative movement in the districts in question?—The enforcement of joint liability has produced, to a certain extent, an unfavourable impression about the movement.

29221. Is it your view that on the whole the sound procedure at this stage is to enforce unlimited liability, and where societies are obviously insecure, to claim to the full extent, to which a member is liable?—I think theoretically the position is quite sound.

29222. I am asking you about the practice and not about the theory? What is the policy at the moment?—At present we enforce joint liability and we generally pass two orders of contribution: I mean, after a joint liability is enforced twice we do not enforce it afterwards and the remainder is written off as a bad debt.

29223. I do not quite understand what you mean by enforcing it afterwards?—In cases where there is a deficit, say a primary society has to meet a liability of Rs. 300 to the Central Bank and the enforcement of individual liability has brought in Rs. 100, then for Rs. 200 orders are passed in an equitable manner against other members and that joint liability is enforced, say, for a series of two or three years and if the enforcement of joint liability does not bring in the whole amount, the rest is written off by the Central Bank which is the main creditor of the society.

29224. Does that mean the member least inclined to meet his obligations is most likely to escape them?—I should not think so; we see what his assets are and we decide accordingly.

29225. Do you examine the assets of each member who is liable?—Yes, the liquidator does.

29226. Who acts as liquidator?—Generally we have one from the staff of the Central Bank or we have a pleader; or in a very few cases we have a Circle Auditor as liquidator.

29227. Do you often have a pleader?—No, only in about 20 per cent of the cases: I am giving the figure roughly.

29228. And is that person engaged by your department to carry out the work?—Yes, the department appoints him as liquidator and he is remunerated at 5 per cent.

29229. He is chosen by your department as such?—Yes. What happens in practice is this; the Central Bank makes a recommendation and the department more or less accepts it.

29230. Upon whom does the charge of liquidation fall?—On the society.

29231. On the individual society?—Yes.

29232. Are there many members of primary societies who occupy their land on a system of occupancy holdings?—Yes. In the Central Provinces, there must be from 60 to 80 per cent occupancy holdings because of the total, about 60 per cent of the tenants are occupancy tenants.

29233. A cultivator holding his land as an occupancy holding can neither mortgage nor sell?—He can surrender, but he cannot sell.

29234. What security has he to offer?—The only security he has to offer is his personal security. He might have some cattle, but agricultural cattle cannot be attached or sold.

29235. Now, you have systems of tenancy which do enable the occupiers to mortgage, have you not?—Yes, we have absolute occupancy tenants in the Central Provinces.

29236. Have you had any difficulty in societies where you have both sorts of tenants and where you have called up the liability?—I have not quite followed the question.

29237. Well, in a case where one member holds his land under occupancy tenancy and the other under an absolute tenancy, have you difficulty in liquidating when you have to deal with two classes of members?—In that case joint liability is still enforced and the absolute occupancy tenant has had to pay up; that also has made the movement unpopular.

29238. So that although the security is there he has to pay?—Yes; he may be penalised for the want of security on the part of occupancy tenants.

29239. What about the cultivator holding under the occupancy system and not under absolute occupancy?—In his case, in practice, when the society is liquidated we have to recover from his crop or attach his non-agricultural

cattle because houses in villages do not fetch much value. We would have to wait for his crop, and houses are practically unsaleable in the villages; they sell for a mere song.

29240. You have told us in your note that primary societies in the Provinces have lacked vigour?—Yes.

29241. I understand there is very little propaganda directed to educating members of the general public in the principles of co-operation in the villages; is that so?—Yes.

29242. And that, in your view, is one of the causes of failure, is it?—Yes.

29243. During the years in which the movement was getting into difficulties, what system was in vogue for examining the assets and liabilities of members applying for loans?—In practice, the movement in the Central Provinces has been organised on the principle that the duties of organisation, supervision and education rested with the Central Banks and the work of valuation of assets for the purpose of granting loans was done by the Central Bank staff. The Government Auditors have nothing to do with the assessment of credit or with the grant of loans.

29244. But, in fact, did the managing committees of primary societies examine applications for loans, or did they pass the applications straight on to the Central Bank?—In practice, there was some sort of examination, but it was not very thorough; it was very sketchy.

29245. Then, had the Central Bank agents, who went to the cultivator applying for a loan, investigated his affairs?—What happens is that the society, when it wants a loan, either sends in a loan application to the Central Bank or, what is more often the case, the members themselves come to the Central Bank.

29246. Without going to their primary society at all?—What I mean is that the members come there and hold a meeting in the precincts of the Central Bank's office. That often happens, because the members are illiterate; they cannot write their loan applications. They come to the Central Bank, their loan application is written there, and the Central Bank with such records as it has got and with such knowledge as it possesses grants or rejects the application.

29247. It is fair to assume that in many cases the Central Bank cannot have the information and the records to judge of the applicant's suitability?—It will have the records because, when a society comes, it will come with its records.

29248. What about the records of a member applying for a loan?—It will be in the *Haisyat* register.

29249. Who prepares that statement?—The *Haisyat* register is prepared by the Central Bank staff.

29250. On the spot?—On the spot.

29251. Have they a large touring staff?—The staff of the Central Banks generally consists of one Manager and, in case of large banks, one or two Inspectors; we have got a system of what is called Group Accountants; they are really paid by the societies' funds; in practice they are attached to the Central Banks, and each Group Accountant is in charge of 30 to 40 societies.

29252. What is the largest number of primary societies grouped under one Central Bank?—Sihora has 261 societies.

29253. Is it a Central Bank?—Yes.

29254. What is the staff of that Central Bank?—The Sihora Central Bank has got one Manager on a pay of Rs. 95, one Accountant for office work on a pay of from Rs. 50 to Rs. 60, one Inspector on Rs. 40, and it has got 8 Group Accountants, on salaries varying from Rs. 20 to Rs. 35.

29255. When a member of one of the 261 societies desires a loan, he has to go up to the Central Bank in order to make the application?—What often happens is that, at the time of the season for advancing loans, the *moharrirs* are out in the villages, they prepare the loan applications there, and the members come to the Central Bank either in a body or depute the *sirpanch* or secretary.

29256. How far are these committees managing primary societies, in fact, at this moment, examining the assets and liabilities of applicants?—I should put it at about anything from 30 to 50 per cent.

29257. Of all the societies?—Yes.

29258. And the rest are either unwilling or incapable of carrying out the work; is that the position?—More or less that is the position.

29259. Are the Central Banks doing their best to throw responsibility on to the primary societies themselves?—They are doing something, but not as much as could be done.

29260. Do you know of any Central Banks that have gone so far as to discourage primary societies from examining these matters for themselves?—I have not come across any Central Bank which has been discouraging it; in fact, it is to the advantage of the Central Banks, even from a narrow point of view, to encourage societies to examine loan applications.

29261 How do you account for the fact that they are not all doing their best to throw that responsibility on to the primary societies?—Primarily because the Directors of the Central Banks are men who are not generally in real touch with the villages, and the staff is not fully qualified for the work it has to undertake.

29262. I see from your printed note of evidence that you are quite definitely of opinion that, for the moment, the best policy in the Province is to straighten out the affairs of the primary societies operating as credit societies, and not to attempt any other form of society; is that a correct interpretation of your views?—Yes; in the Central Provinces at any rate, I am most strongly of opinion that all our efforts must be concentrated on the consolidation of the credit movement, except in Bilaspur where the movement is doing very well.

29263. On page 35 of the memorandum (page 11 above) it is stated: "The time may be looked forward to when each agricultural association will have its own demonstration plot, as several have. On these will be shown by the agricultural assistant the improved methods to be introduced which the members will undertake to incorporate in their own activities". What societies will those be exactly?—At present, I have got some agricultural associations registered under the Co-operative Societies Act in Berar; two or three of them have got their own demonstration plots, they purchase implements and sell them.

29264. Would the distribution of seeds be their primary function?—At present these agricultural associations do not distribute much seed, to my knowledge. For that, there are what are called Seed Unions, and they are a separate organisation.

29265. *Prof. Gangulee:* Are these Seed Unions registered under you?—Some Seed Unions are, but a good many are not.

29266. *The Chairman:* Then it is stated: "Such associations will get capital by selling seed, implements and manures and arranging for the marketing of members' crops". Is not that rather a curious way of obtaining what, I suppose, would be working capital? I do not quite follow that?—I should much prefer the organisation for the marketing of members' crops to be kept separate from an agricultural association.

29267. I do not quite see how a society engaged in selling seed is going to get capital by selling seed, implements and manure?—What is meant, I suppose, is that they will get working capital out of the profits, but that would be a slow method of doing it. The agricultural associations, I am speaking of those which are registered, have got a share capital of their own; they are organised on a share capital basis; the working capital is provided by share capital and such deposits as they may be able to attract. Some agricultural associations have borrowed from the Central Bank.

29268. Is it your view that matters are in a somewhat sounder position now than they were two years ago?—I think so; financially, we are distinctly sounder than we were, and to a certain extent, in so far as reorganisation has proceeded, we are in a more satisfactory, or less unsatisfactory, position.

29269. Are you founding this reorganisation on a real endeavour to educate your members in the principles of co-operation?—Yes.

29270. What machinery have you got for attaining that end?—At present, I depend on my Circle Auditors; we tried it through the agency of the banks for one year, but we found that we could not get much change out of them.

29271. How many Auditors have you got?—35 in the Central Provinces and Berar, for the Central Provinces 24.

29272. They audit all the societies' books?—Yes.

29273. Have they got time to properly audit all the societies' books?—We have got another set of Auditors called the Federation Auditors, of whom there are 26 in the whole of the Central Provinces and Berar and 24 in the Central Provinces. They do a large part of the auditing.

29274. The Federation Auditors?—Yes.

29275. Whose servants are they?—They are supposed to be servants of the Federation. There is a Co-operative Federation in the Central Provinces and Berar, but it is not functioning at present.

29276. Who pays their salaries?—They are paid from the levy of a subscription of Re. 1 per member from every primary society, and whenever there is a deficit, it is paid by the Central Banks. Out of this Re. 1 are also met the charges for the writing of accounts.

29277. How long do you allow for the audit of each society's books, on the average?—About 2 days; we find each Federation Auditor audits about 90 to 100 societies.

29278. Is that about as much as your auditing staff can achieve, working at top pressure?—There is a certain amount of pressure, but it is not top pressure; at top pressure they can do about 125 societies.

29279. What time do they find to devote to the duties of educating members in the principles of co-operation?—Auditors as such find very little time to do that, but I am asking the Government Auditors to do that, and I have relieved them of the duties of audit, and have made other arrangements for audit; the Federation Auditors are doing the auditing, and I have licensed some other persons as Auditors.

29280. Your suggestion, on pages 168 and 169 of your note, for the strengthening of your department for this purpose, is, it appears to me, a very modest one It is to add one Circle Officer and certain subordinates. What I am trying to do is to give you an opportunity of saying, if you are of such an opinion, that you think your staff as a whole is quite inadequate to deal with the audit and with the amount of educative work, which presumably must be forthcoming if the movement is to recover. Do you think you are short of staff?—So far as the Auditors are concerned, I am certainly short of staff.

29281. And yet, you are depending upon these Auditors to do the educative work; is that so?—No, I have proposed strengthening the staff by a Government grant of Rs. 25,000 If that is given, the present Auditors will be relieved from the work of original audit. The arrangements at present made are only makeshift arrangements.

29282. Do you think the Auditor is a good man to do the educative work?—He is the best man available at present.

29283. On page 169 you say: "Circle Auditors in the Central Provinces would be relieved of the work of audit"?—I mean, there, original audit.

29284. Perhaps you would make that correction?—I meant original audit, because they will have to do a certain amount of test audit.

29285. What superior audit have you, in fact, at this moment?—Audit by the Circle Auditors in the societies, I have got two Chief Auditors also, and they conduct test audit of a certain number of societies.

29286. What is the average salary of Circle Auditors?—Rs. 85 to Rs. 150; I consider it inadequate.

29287. Do you come across many cases where members are borrowing both from the societies and from the moneylenders at the same time? -Yes; I do.

29288. That is common, is it?—Yes; I should say it is common; especially so in the Central Provinces.

29289. What is your oldest selling society?—The oldest selling society is the one at Akola; it is about four or five years old.

29290. Does it deal in cotton?—Cotton and *juar*.

29291. Is that society in a good state?—It was not making much progress till last year; but now we have reorganised it and we expect that it will make better progress than before. Our main difficulty in the past was due to want of propaganda and want of good and efficient management.

29292. Has it paid any dividend or bonus?—It has paid dividend at the rate of 6 per cent and one year it has paid a rebate also to members.

29293. That is estimated for every 10 rupees worth of credit sold to the society?—It is a rebate on the commission. That is, the societies charge commission just as the commission agents do and a certain rebate is then allowed.

29294. It is a method of distributing profit?—Yes. Non-members also bring in their produce but they do not get the rebate.

29295. Are you familiar with the work of this selling society?—Yes.

29296. With the details?—Yes.

29297. Is any grading carried out by the society?—No; no grading is carried out; but, from next year, we are going to post an Agricultural Assistant and he will do the grading.

29298. Do you look for much advantage from grading?—Yes.

29299. It rather depends on whether the cotton at present passing through the society's godowns is greatly mixed or not, does it not?—Yes. What happens actually is that the cotton is taken down to the gin and there the commission agent grades it; our Agricultural Assistant will do the same thing.

29300. For the society?—Yes.

29301. Does the society gin?—No, it does not gin; at present the cotton is sold unginned.

29302. Has it storage capacity?—No.

29303. So that it cannot hold up the crop?—No; the cotton brought to the market is sold on the same day.

29304. Would you regard storage as a valuable addition to the plant, as offering a valuable addition to its opportunities?—It is rather speculative.

29305. You would rather not see that attempted?—Not for the present; it would involve the society in risks. At present the society runs no risk whatever because it sells on commission.

29306. Do you think the members are getting a better price for the cotton than they would in the open market?—The price fixed is the same; but where the members get advantage is with regard to unfair weighment and unfair assessment of deductions. So far as these two things are concerned, the society ensures better weighment and a fair assessment of deductions.

29307. That is your earliest society?—Yes.

29308. You have been starting new societies, have you not?—Yes; we have started one at Amraoti and another at Dhamangaon; they were registered only last year and they have started working this year.

29309. Dealing with this year's crop?—Yes.

29310. Can you say at all how they are doing?—They have made a most promising beginning. I have made arrangements for propaganda; I have posted one Circle Auditor for propaganda purposes in connection with the sale society in villages served by the Amraoti and Dhamangaon markets.

29311. And they are operating in the same manner as the first society?—Yes.

29312. What accommodation have they, just a small office?—Yes, in the cotton market. At present the man entrusted with the actual business of conducting sales is a co-operator who has experience of cotton business and for the first two years he is prepared to do the work gratis.

29313. The cultivator brings his cotton to the office doors, is that the position?—To the market in which the office is situated; then the rate is fixed and when the rate is fixed the cotton is purchased and taken to the gin where the man who is conducting the sales is present to see to the weighment and to the assessment of deductions. This year we have no trouble about assessment of deductions because all the crop is uniformly of the same quality.

29314. What do you mean exactly when you say that the rate is fixed?—The rate is declared in the cotton market under secret signs. The actual settlement is done secretly and the rate is declared for the day for all the carts; that is the prevailing rate in the market that day.

29315. But fluctuations above and below that *datum* line occur, do they? Is that the minimum rate for the day or is it an absolute rate for the day?—Generally speaking, it is the common rate; but some purchasers might give a higher rate.

29316. Never a lower rate?—Occasionally a lower rate too. The actual settlement of the rate is really done secretly. Suppose the rate for the day is Rs. 80, any one may say "your cotton is bad and I will pay a reduced rate".

29317. The society then acts as a commission agent for the members?—Yes.

29318. And the society never buys any cotton?—No; it simply sells to the purchaser.

29319. Is the officer carrying out the business of commission agent for the society a member of the Agricultural Service?—No; he is not.

29320. What is he as a rule?—In the Akola society, he is the Manager of the Central Bank. In the Amraoti and Dhamangaon societies, he is a co-operator and he is also intimately connected with the cotton business and he conducts the sales. In the case of Akola, from next year we intend to post an Agricultural Assistant to look after the business there.

29321. Would he be responsible for looking after the business of all these societies?—No; only for that one society; we have recommended that there should be one such Assistant for each society.

29322. Whole-time?—Yes, so that in the slack season he will do propaganda in regard to seed distribution and so on and in the cotton season he will be fully engaged on the business of the society.

29323. To what grade will he belong?—He will be an officer more or less of the grade of my Circle Auditor on a pay of Rs. 80—150. There are two grades in the Agricultural Department, the Lower Division grade and the Upper Division grade. If he is in the Upper grade, he will go up to Rs. 250.

29324. And his salary will continue to be paid entirely by the Government?—Yes.

29325. *Prof. Gangulee:* Will he not require some training in co-operative principles?—Yes, he will.

29326. Where will you train him?—He will be trained here.

29327. *The Chairman:* When is he going to be put on this work, next year?—Yes; but he will be placed at my disposal from 1st April next and he will be trained and put in charge of the society from the next cotton season.

29328. What type of managers have these societies secured so far? Are you satisfied with the calibre of the men?—You mean selling societies?

29329. Yes?—I was not satisfied with the type of man that the Akola society had for the last two or three years because he was only a man on Rs. 30 or Rs. 40.

29330. He had many opportunities?—Yes and he might misuse them. But at present I am quite satisfied with the man I have got.

29331. I understand from the evidence of the Director of Agriculture in this Province that for the present you are not of opinion that the co-operative movement can take any useful part in the consolidation of fragmented holdings; is that so?—Yes, except in Bilaspur where the credit movement is in a sound condition; but in the rest of Chhattisgarh Division I do not think it can do anything.

29332. The reason is that you think that the straightening of the credit movement is the first duty before you?—Yes; and I think that though the co-operative movement was not able to do anything for the consolidation of the holdings, other avenues should not be barred.

29333. You do not mean that the co-operative movement will never do anything in that direction?—No, because I say that in Bilaspur it might do something.

29334. I think the two cattle-breeding societies you had decayed, did they not?—Yes.

29335. Did they achieve anything before they disappeared?—I should say practically nothing. I had no personal experience of them as Registrar but only as Sub-Divisional Officer because they were dissolved before I became Registrar; but I knew them fairly well as Sub-Divisional Officer.

29336. What is your strongest Central Bank at this moment, that is, which is the society that has the largest deposits?—Akola and Amraoti; they are two very big banks.

29337. What deposits have they?—Akola has 17 lakhs, Amraoti 20 lakhs, and Nagpur 5 lakhs.

29338. Who chose the managing staff of these banks?—The banks themselves; I have got nothing to do with the selection of the managing staff.

29339. You mean the Committee?—The Board of Directors.

29340. How are the Directors chosen?—In a Central Bank there are two kinds of shareholders, firsly individual sharholders who are not members of the primary societies and secondly members of the primary societies; the Board of Directors is chosen partly by the individual shareholders and partly by the members of societies who are shareholders of the Central Bank.

29341. Are any societies, as such, members of these Central Banks?—All societies are members

29342. So they too are represented?—Yes and the Directors of the societies predominate in numbers.

29343. Now I come to the primary societies. You told us that a certain important proportion of these primary societies are not capable of managing their own affairs at all. Have they taken a part in appointing these officers to manage the Central Banks?—Yes.

29344. The societies, as such, have representation on the Boards, have they not?—Yes, in so far as they have got Directors on the Central Bank, they can be said to have taken part; on the working committee there are one or two representatives of primary societies

29345. Is the business of this meeting at which the Directors are appointed carried on in English or in the vernacular?—In the vernacular of the district.

29346. Is the meeting largely attended as a rule?—Generally. In some places we find difficulty in getting a quorum.

29347. You find difficulty in getting a quorum?—Yes.

29348. *Mr. Calvert:* At a general meeting?—Yes, at a general meeting in one or two places we have found difficulty; but generally speaking it is well attended.

29349. *The Chairman.* How far do you regard yourself as responsible for the managing personnel of the Central Bank? Has your department any responsibility at all?—No, it has no responsibility.

29350. That is your view?—It has no responsibility at present, because it does not select them and it does not deal with them in disciplinary matters: it has no control over the staff of the Central Banks.

29351. So that if you knew that a particular Central Bank was being improperly managed, you could take no action; is that your view?—Not that I would not take any action; I should write to them, either officially or demi-officially.

29352. Even demi-officially, if you have no responsibility, I do not see how you could press the matter further?—The Registrar does not appoint them, nor has he any disciplinary power over them; if he came to know things were going wrong, he would do his best to put a stop to it.

29353. To that extent you do feel yourself interested?—Very much.

29354. *Mr. Calvert:* That is not quite complete. You could ask the Local Government to withdraw concessions?—Yes.

29355. And you could liquidate on your own motion?—Yes, I could liquidate the Central Bank or any bank, but that would be an extreme measure to adopt.

29356. And you could ask the Govenment to withdraw the exemption from income-tax?—Yes, if the matter were really very serious, one would do that; but for ordinary petty matters, one could not possibly think of liquidating a Central Bank.

Sir S. M. Chitnavis: The King Committee recommended that Registrars should have control over the staff, but the Legislative Council got that recommendation cancelled.

29357. *The Chairman:* What machinery is at your disposal for watching the Central Banks and the manner in which their affairs are looked after?—I have got my Circle Auditors and Circle Officers; I receive a number of statements from them regarding the Central Banks; the banks are frequently inspected: I go down myself and other officers go down; and the Circle Auditor is there, he conducts a monthly inspection of the bank. Several statements as to the financial position of each bank are prescribed, and they come to me.

29358. How about the Provincial Co-operative Bank?—I get fortnightly statements exhibiting the financial position; I attend all the meetings of the Managing Committee of the Provincial Bank though I am not a member of the Managing Committee; I attend all meetings of the Board of Directors, and I am often in communication with them, because the headquarters of the Provincial Bank are here and I am here.

29359. How far does the Board of Management of the Provincial Co-operative Bank attempt to watch the affairs of the Central Banks; are they watched very closely?—It does to a certain extent, yes, and it largely relies on me for that.

29360. It largely relies on you for its information as to the state of the Central Banks?—Yes. At one time it had an Inspector who used to inspect, but I understand that his criticisms were resented by the Central Banks, and now he has been withdrawn from inspection duty.

29361. Who is doing his work now?—The Provincial Bank has not got an inspecting agency.

29362 Have you an inspecting agency?—So far as my inspecting agency is concerned, it is myself and the Circle Officer; that is my inspecting agency; the Circle Officers are in close touch with the banks.

29363 *Sir James MacKenna:* Who started this idea of putting primary societies so completely under the control of the Central Banks?—You mean which individual started it?

29364. How did that policy arise?—This system was inaugurated in the Province by Mr. Crosthwaite.

29365. How long ago?—More or less from the beginning of the movement.

29366. Is it a fact that in 1920-21 the co-operative movement in the Province got into such a state that they had to apply to the Government of India for a loan of 24 lakhs?—Yes, that was during a banking crisis; the bank dissipated its fluid resources, and it had not money to pay the depositors; on top of that came scarcity, so that there was not enough money to finance the Central Banks; Government assistance had to be given in the shape of a Government loan of 19 lakhs. It was purely a banking crisis.

29367. *Sir S. M. Chitnavis:* Altogether 19 lakhs?—Yes.

29368. *Sir James MacKenna:* Has that been repaid?—Yes, it was repaid in full in 1925.

29369. What were the relations between your Provincial Bank, the Central Banks and the ordinary banks in the Province?—The Provincial Bank has got a cash credit with the Imperial Bank to the extent of 4 lakhs, that is a cash credit on pro-notes of primary societies.

29370. *Mr. Calvert:* Endorsed by a Central Bank?—Endorsed by the Central Bank and by the Provincial Bank too.

29371. *Sir James MacKenna:* Did they lessen or withdraw that guarantee during the crisis when the movement was in such a shaky condition in the Province?—No, I think it remained the same. It was 2 lakhs and it remained the same, and last year it was increased to 4 lakhs.

29372. That looks as if the outside banks were getting a little more confidence, does it not?—Yes, it does indicate that.

29373. With regard to liquidation, the figure you gave to the Chairman I think would lead to the inference that about 25 per cent of your societies have been liquidated, while in your printed memorandum in answer to Question 22 (*a*) the number of societies at present under liquidation is 12½ per cent. Even the latter figure is a very large one?—Yes, I gave the total figure to the Chairman.

29374. Why has there been so much liquidation?—We have to liquidate bad societies; bad societies are due to a large extent to what I consider to be defective organisation in the past.

29375. Is not there any *locus pœnitentiæ;* do you not resort to liquidation as the very last step?—Yes.

29376. Do you not try to bolster them up?—No, we do not try to bolster them up; when we find a society cannot be revived, we put it into liquidation.

29377. You said the liquidation was frequently done by pleaders?—I said about 20 per cent.

29378. Who do the rest, your own Assistant Registrars?—No, that is done by the staff of the Central Bank. It is done to a certain extent by my own staff, but to a very small extent.

29379. Would you agree that they are in a better position to conduct the liquidation than an outside pleader?—Yes.

29380. They are in a better position to get at the real facts of the case?—Yes. Those 20 per cent consists of old cases; at present I do not entrust liquidation to a pleader if I can help it, because they do not find time to go out into the villages; they have to do their work from headquarters.

29381. What is the process of liquidation. Who confirms the liquidation?—At present there is no appeal against the order of the liquidator according to the rules in this Province Mr. Crosthwaite was strongly opposed to it.

29382. Is there no appeal against the order of the liquidator?—No, unless there is a remedy in the civil court; to the Registrar there is at present in the rules no appeal.

29383. The liquidator's award is final?—Yes.

29384. *Mr. Calvert:* Under certain conditions?—In certain Provinces, the rules under the Co-operative Societies Act provide for an appeal to the Registrar or provide for confirmation of the liquidator's order by the Registrar.

29385. *Sir James MacKenna:* The position in Burma is that the liquidation is confirmed by the Registrar, from whose decision an appeal lies to the Financial Commissioner?—There is no such thing here.

29386. You have not dealt with land mortgage banks yet, have you?—No, I simply said the question was under consideration; we are thinking of it.

29387. Have you any idea of the line you would take?—I think the lines would be largely those decided upon by the Registrars' Conference last year; they went into the question in great detail.

29388. Acting under the existing Act?—Yes.

29389. Without any special legislation?—Yes.

29390. What is your view about co-operation in general? Would you not agree that the movement is likely to have little solidity until we have less of this sentimental talk about the beauties of self-help and co-operation, and inspire into our members a little more ordinary commercial honesty?—I feel we must base the co-operative movement on the solid material advantages we can offer the members of primary societies; we should not make too much of the moral advantages: not that the moral side should be neglected, but the moral side will not appeal to the people unless and until you show them the material advantages to be derived from organisation in co-operative societies.

29391. You agree that the ultimate test is business efficiency and business honesty?—Yes.

29392. *Prof. Gangulee:* Do liquidations of societies tend to decrease the confidence of the people in the co-operative movement?—If they are on a large scale in any particular district they would tend to decrease confidence, but if only a small number of societies are liquidated in a particular district, I do not think that would have any appreciable effect on the amount of confidence which the villages have in their primary society.

29393. As I understand, the process of weeding out bad societies in this Province is going on at a rather good speed?—It is going on at a fair rate, yes.

29394. What has been the effect of that on the movement, speaking generally?—In one or two districts it has tended to lessen confidence, but in those particular districts the movement is really in a state of suspended animation.

29395. On page 22 of the provincial memorandum* you state the causes of the deterioration of the co-operative movement; having stated the two first causes, one being the too rapid expansion and another being series of bad seasons, and so on, you come to the third cause and you say: "the discipline of Government control, upon which the stability of the movement in the past has almost entirely depended, has been relaxed, and has not yet been replaced by the discipline of good citizenship". Could you amplify that?—I suppose what the writer of the memorandum meant was that in the past the advice of the department used to be listened to and during the non-co-operation period it was not listened to so much. That is what I think he meant.

29396. When you say that discipline and Government control have been relaxed, what do you mean? Why were they relaxed?—I think that was the case because the people were averse to accepting advice of the department, but things are very much better now. As a matter of fact, I was told that in the non-co-operation period people in one district went about saying that these co-operative societies need not be paid, and that if they did not pay them then there would be no occasion for them to pay in future. I think that was what was really meant, because the statutory control remained the same as at present. Things are very much better now.

29397. Then you say that though sufficient money is now available for the financing of the movement, it is not being used fully as the rates of interest demanded from members are regarded as excessive. Why did you not reduce the rate?—The rates have been reduced as much as possible. Members are charged 12 per cent. In addition we have a scheme for the utilisation of the reserve funds and under that scheme 500 societies are admitted; the rates vary from 9 per cent to 11½ per cent and the question as to whether the rates can be reduced further or not is a financial one.

29398. I have one or two questions to ask you on primary societies. Do you undertake any survey of an area where you propose to work a society?—At present our system of organisation is this, that in case there is any demand for a society in a particular village it is organised by the organiser and altogether three visits are paid to that society. After an interval a Director visits it, and at another interval the Circle Auditor visits it, and, if they all agree, the proposal is sanctioned and registered after these investigations.

29399. What do you really investigate in these series of visits?—We enquire into the correctness of the statements made by them into their assets and liabilities, into their reputation in the village and into the general reputation of the village also, I mean, in matters such as proneness to litigation and things like that.

29400. Could you kindly tell the Commission very briefly the history and development of a very well-organised village primary society that you know of, one that you consider the very best, working very efficiently and to your satisfaction? You just stated about Bilaspur having a number of village or primary societies which are working very well. Can you select one from that area?—The dominating feature in the Bilaspur societies has been that there are very few arrears, the total would amount to, I think, very little. In fact from the latest statement I find that the arrears on the 30th June were practically *nil*. But even in Bilaspur they have not been able to attract deposits in societies themselves. In Berar, several societies are able to attract deposits.

29401. But the point I wanted to get at is this: I want to trace the history and development of a village primary society which you consider now to be very efficient, well organised and which satisfies the Registrar? Can you give me very briefly one instance only?—I have one society in mind in which there are deposits of non-members and they do not borrow from outside; it is a society in which there is a very satisfactory measure of punctuality and meetings are held, accounts are written by members themselves, loan applications are also written by them, a scrutiny of the loan application is made on the spot by the members of the managing committee, and they have been able to increase their assets.

*Not reprinted.

29402. **These are the outstanding features of that society which you refer to? Is it your impression then that such a society which you have described just now has reduced to any extent the indebtedness of the people?**—In that particular society I believe there has been some increase of indebtedness but it has been more than balanced by an increase in assets, so that you might consider that the net result has been a reduction of the indebtedness.

29403. Has that society's work any effect on the moneylending business of that area?—Distinctly. As a matter of fact in that village there are no moneylenders.

29404. You state that credit societies are increased in Berar? To what factors do you attribute the success of the movement in Berar, as compared with the Central Provinces?—In Berar, the people are more intelligent, better educated and the Directors of the Central Banks take greater interest both in the case of rural and urban areas; the land tenure in Berar is also favourable for the growth of the co-operative movement.

29405. Would you be prepared to say that the two fundamental factors working there are the system of land tenure and the extension of money crops, such as cotton? Do you think that these two factors could be taken to be the main causes of the success of the movement in Berar?—Yes, *plus* the greater intelligence and the greater interest taken by the people in the movement itself.

29406. Are there no malguzars in Berar?—No.

29407. As regards the new type of primary societies which are being organised, what steps have been taken for remedying the defects of the older type?—In the new type of society we have tried to shift the centre of gravity of the movement as far as possible to the society itself. The present type of society in vogue in the Central Provinces is not a share type society, that is to say, it has not got any share capital of its own although members of primary societies take shares in the Central Banks in proportion to their borrowing. In the new type of societies, members themselves hold shares in the societies instead of in the Central Bank. In the old type, the proportion of share capital to borrowing was 1 to 10; in the new type it has been reduced to 1 to 20 and a certain maximum share holding has been fixed. It is left to the discretion of the society to fix the maximum or not. In the old type the reserve fund was invested outside the business of the society; in the new type it is invested in the business itself, so that members should have a greater interest in the management of the affairs of the society, because they will find that if they make any bad use of that money by granting indiscriminate loans the reserve fund will go.

29408. You state on page 171 that in some societies members borrow from outsiders? Who are these outsiders?—They may be village moneylenders or malguzars for instance.

29409. To what extent do the malguzars dominate the situation?—It all depends on conditions in different villages. In certain villages they dominate and in certain villages the malguzar himself may be indebted. I mean the source is outside the co-operative society.

29410. Do you know the rate of interest charged?—It varies. Sometimes it is 18 per cent, sometimes it is 24 per cent. In Mandla, the rates charged by Kabulis go up to 48 and 50 per cent.

29411. You say here that the Central Provinces and Berar spend far less on co-operation than any other major Province? What is your total budget allotment?—It was about Rs. 1,74,000 last year.

29412. Do you think that the progress has been impeded by lack of funds or by the paucity of educational workers?—I think improvement in the condition of the movement is restricted by the lack of funds at present, because if we had more funds we could place at the disposal of the movement more agencies for education and supervision. I mean if we cannot get free enthusiasm we could at least get a paid staff; if we could get neither money nor enthusiasm we should remain where we were.

29413. Are you satisfied with the non-official assistance that you have hitherto received?—Yes, in a certain way. Non-official agency has done quite a lot; one really does not expect agencies of this nature to go into the villages, but so far as work in the headquarters is concerned I am quite satisfied with

it, save for a few exceptions. You cannot expect non-official agencies to go into the villages and be in touch with societies, with the rural conditions, and to know and realise the wants and needs of members. That is what they are expected to do under the present system of the organisation of the movement.

29414. So far as the village primary societies are concerned and the movement generally is concerned, have these non-official gentlemen, to whom you pay tributes here in this note, gone into the villages and helped you?—No, not in the villages generally, although there are instances where gentlemen have gone to the villages for this purpose.

29415. Do you think you would succeed in reorganising societies or do you hope to do so without the assistance of non-official organisers? Would you be able to teach the people without the assistance of non-official gentlemen?—Their assistance would be very welcome to me.

29416. Do you think that spoon-feeding by Government can give life to this movement?—Assistance by Government will give life to the movement and I do not think that that can really be said to be spoon-feeding.

29417. Money may come from the Government, and auditing and other controlling agencies may be supplied by the Government, but you will perhaps agree with me that the creative impulse, the vitality of the movement must come from the people?—Yes, if the primary societies themselves are not willing to improve themselves, the movement cannot be improved.

29418. And these primary societies cannot improve unless some sort of non-official agency stands by them?—I should be very willing to have a non-official agency.

29419. Do the primary societies admit the less prosperous cultivator, that is a man with say 2 or 3 *bighas* of land?—Yes.

29420. What is the nature of the liability accepted by the Central Bank?—It is limited.

29421. And what is the security on which Central Banks sanction loans?—There is unlimited liability.

29422. When Central Banks give money to primary societies, do they not ask for some sort of security?—For long-term loans if there is a tangible security, *viz.*, transferable right in land, mortgages of land are taken, and mortgages in Berar are frequent.

29423. Do these Central Banks sanction loans to non-credit societies?—Up to the last year Central Banks were debarred from dealing with non-credit societies but that restriction has been removed now and in only one case has a Central Bank advanced a loan of Rs 2,000 to an agricultural association.

29424. Are individual members of the Central Bank eligible for loans?—No.

29425. When you say that the Central Banks have not been able to perform their duties adequately, do you mean to suggest that the reason for that is insufficient staff or supervision?—Yes, in some cases that is so, and in a good many cases they are not adequately equipped to do their work.

29426. *Sir S. M. Chitnavis:* You think that the staff is insufficient?—Yes.

29427. *Prof. Gangulee:* Do you think that the combination of financial and supervisory functions in the Central Bank is satisfactory?—I would like to separate finance from supervision as far as possible.

29428. How would you achieve that end?—By transferring the work of supervision largely to the Government agency.

29429. Would you like to create a Board of Supervision?—I would like to transfer this work of supervision to Government Auditors, who would then be really Inspectors.

29430. Do you think co-operative societies can be employed in connection with the grant of *taccavi* loans?—Do you mean, instead of giving the loans to individual members, they should be given to the societies?

29431. Yes. Could you employ co-operative societies for the purpose?—Yes, I suppose it could be done.

Sir S. M. Chitnavis: In 1921 the Central Banks were utilised for the purpose.

29432. *Prof. Gangulee:* In that case, what procedure would you adopt? How would you incorporate, in your co-operative societies, the arrangement for granting *taccavi* loans?—I suppose the loan could be made directly to a society on its unlimited liability, but perhaps, it would be preferable to deal with a central organisation instead of dealing with individual societies.

29433. We have been listening to an account of the efforts at consolidation of holdings in this Province. Has any one been sent to the Punjab to see how they have achieved that end through the co-operative movement?—No one has been sent to study it in detail; Mr. Roughton was there for about a fortnight, but no one has actually studied it in great detail.

29434. Have you in your possession any report submitted by Mr. Roughton?—I have.

29435. On the consolidation of holdings in the Punjab?—Yes.

29436. You said that it was desirable to form societies for compulsory education. Have you any idea how such societies could be organised?—There I was really thinking that there might be a society where there might be a by-law that members of the society should agree to send their sons to a particular school.

29437. *Mr. Calvert:* On the Punjab model?—Yes. If we could get such societies, we might get on to the Education Department.

29438. *Prof. Gangulee:* Is the Registrar a whole-time officer?—No; he combines the functions of the Director of Industries and Registrar, Joint Stock Companies, he is also the Chief Customs Authority, but there is not much work in connection with that.

29439. Do you think it would be desirable to have a whole-time officer for the co-operative movement in this Province. in view of its deterioration?—It would be desirable; it would be necessary if the work of the Industries Department expands.

29440. *Mr. Calvert:* Do you not recollect that when Mr. Roughton went to the Punjab he took with him 2 or 3 non-official members?—Yes.

29441. He did go into the question of the consolidation of holdings in some detail and Rao Bahadur Jagannath Prasad and Rao Bahadur Brahma who accompanied him went into great detail?—Rao Bahadur Brahma did not go into great detail, but Rao Bahadur Jagannath Prasad of Bilaspur went into the question in some detail, and he has sent in a report also.

29442. You are also Registrar of Joint Stock Companies?—Yes.

29443. Is it your experience that joint stock companies fail and go into liquidation?—Yes.

29444. Have you ever heard of banks, even run by Europeans, failing and incurring losses?—Yes.

29445. So that, co-operative societies are not the only associations that sometimes come to grief?—No; all kinds of businesses come to grief, and co-operative societies are no exception to that.

29446. From this crisis of 1921, would you draw any definite lessons or warnings?—Yes; ordinary banking principles should never be neglected; that is one great warning.

29447. Was that crisis made possible by the collection of the fluid reserves at the top?—The position at the time was that the Provincial Bank was supposed to maintain the fluid reserves for the entire co-operative movement, and in return for that the Central Banks were passing the reserve funds of the societies to the Provincial Bank at 3 per cent interest.

29448. Their fluid resources had been collected at the top, and, being there they were put to uses for which they were not intended?—Yes.

29449. If they had been kept with the original societies, that would not have been possible?—No, it would not have been possible for the Provincial Bank to dissipate the fluid resources in the manner it did, if they were not with it.

29450. Are the Central Banks largely controlled by urban Directors?—Yes.

29451. And they deal with the applications for loans?—Yes; the applications for loans are dealt with by the working committee.

29452. Is their willingness to accede to applications for loans influenced by the occasional large surplus cash balances?—Not at present, but it was so in the past. Financing at present is done very cautiously, but in the past there has been indiscriminate financing.

29453. In fact, when they had a large surplus in hand, that would incline them to be really easy in giving loans?—Yes, and also to find an outlet for the funds; they tried to organise societies in order to get rid of their surplus funds.

29454. From what class are the Managers of Central Banks drawn; from the rural, the cultivating, or the urban class?—Largely from the urban class.

29455. Are they trained?—They were not particularly trained, but for the last two years I have been opening training classes for a month every year.

29456. You find difficulty in getting thorough training in banking principles for your Managers?—Yes; as a matter of fact, I do not know of any place where they can be trained in the principles of banking.

29457. You have probably heard that the Imperial Bank of India have the same difficulty. You mentioned that some banks like the Sihora Central Bank have maintained an Inspector?—Yes.

29458. What class of man is he?—He is the sort of man who has served in a bank for a long time as Group Accountant. The particular Inspector of the Sihora Bank happens to be a very good man; he has put in 15 years' service.

29459 They are promoted from below?— Yes.

29460. Is there any admission direct from the graduate class?—No.

29461. Are they given any training in rural economics?—No.

29462. Is my book *Law and Principles of Co-operation* used as a text-book?—It is largely used in our refresher classes In our training classes, we have made use of it.

29463. To what extent could the staff in touch with societies pass a pretty stiff *viva voce* examination on that book?—It is very difficult to say. Are you referring to the staff of the Central Banks?

29464. All the staff employed in connection with societies; you call them by various names?—It is really difficult to say to what extent they would pass such a test I do not suppose all would pass.

29465. Do I gather that you do not put them through an informal examination. As you go on tour and meet the staff, do you put them through an hour's cross-examination on the book?—I do not put them through a test on that book, but I do put them through a test so far as co-operative societies in that tract are concerned, to test their co-operative knowledge.

29466. Are the Federation Auditors thoroughly trained in this book?—Some of the Federation Auditors do not know English, but those that do know English know this book; I cannot say they are thoroughly trained, the Government Auditors are trained.

29467. From what class of person is your Federation Auditor drawn?—Is he drawn from the cultivator class or the urban class?—He is largely drawn from the urban class.

29468. Is it not part of your policy that the Auditor must be of the cultivator class of the same locality as the bank?—It has not been so so far; we wish to draw the staff from villages as far as possible. At present, I am only recruiting graduates for the posts of Government Auditors.

29469. Could you just clear up a little matter on pages 169 and 170 of your note, from which I gather that primary societies have to pay 40 per cent of their profits towards Federation Auditors and a further 15 per cent towards some institute?—No, this scheme was to apply to the Central Provinces only; it was not to apply to Berar. This 40 per cent is not only for audit but for writing of accounts also; it includes both, so that 60 per cent balance would remain with the societies. As a matter of fact, the proposals are being modified at present. What I wish to do is to levy 7½ per cent to 10 per cent for audit only, not more. I wish to separate the two, and levy 7½ per cent to 10 per cent for audit, and leave the societies of the Central Provinces to make their own arrangements for the writing of accounts.

MR. C. M. TRIVEDI.

29470. You state that the land tenure system, under which these tenants cannot mortgage or sell, is an obstacle to the growth of the co-operative movement. Does that mean that in this Province you have given up character as the basis of your movement?—No, we have not given up character, but we find that absolute occupancy tenants, for instance, are not willing to go into the movement, because they fear that if there is any default, the burden will fall on them.

29471. Have you got in this Province any separate societies for the menial class, the ordinary landless labourer?—We have not got any separate societies for them.

29472. Any societies for people like the *tonga* drivers?—No, we have not.

29473 For people without any landed property?—No. We have got two sweepers' societies, and we are thinking of organising one sweeper society in Nagpur.

29474. In that case, your basis there would have to be such moral fibre as they possess?—In these sweepers' societies we recover the dues through the Municipal Committee; they are authorised to deduct it from the sweepers' pay.

They are not based entirely on the people's character.

29475 In answer to another question, you say that non-officials, especially of the urban class, have rendered valuable services in organising primary societies?—Yes.

29476. Are these the primary societies which have, to a large extent, failed?—Some of them have failed.

29477. Are not these non-official organisers usually busy professional men?—Yes, generally. Some of them may be landholders, but generally they are busy professional men

29478. Who will find difficulty in giving as much time as they would like to the work?—Yes.

29479. Does it mean that their connection with the society is apt to diminish or come to an end when the organisation is done?—These non-official gentlemen are generally Directors of a Central Bank, and when they find time they go to the villages and organise societies; their actual contact with that particular society after that may have ceased, they may not go to that particular society, but they would remain in touch with the society as far as the headquarters are concerned when members come to the headquarters.

29480. Do they follow up the organisation by persistently teaching the members the way to run their own affairs?—It has not been done generally.

29481. The difficulty is not in the organisation but in the teaching?—Yes, in the teaching and supervision.

29482. And the connection between the original organiser and the society is apt to come to an end?—Yes; that is to say, the organisers are not made responsible for the subsequent working of the society.

29483 If one of these societies goes into liquidation he is not made to do the liquidation work?—It may not be that particular man himself, but the staff of the Central Bank.

29484. Not necessarily the organiser?—No; not necessarily the organiser. In some cases the organiser may not be there; he may be a temporary servant of the bank.

29485. In giving the figures for loans last year it seems that the average per member in the Central Provinces is about Rs. 24 as compared to Rs. 157 in Berar. Does that mean that the societies in the Central Provinces are in rather a worse stage than the figures of liquidation would suggest?—But all these 49,000 have not taken loans.

29486. That is the average?—Yes.

29487 The average of the Central Provinces is very low compared with that of Berar?—Yes.

29488. They are less active than the figures of liquidation would suggest?—But the needs in the Central Provinces are smaller, too, than those in Berar.

29489. Hitherto you have not had the Punjab share system in the Province?—We are adopting it now; our system is modelled now more or less on the Punjab system.

29490. Was it not the rule in this Province that your primary society's reserves were taken out of the society?—Yes.

29491. And you are now trying to go back and put the reserves back into the society?—Yes.

29492. You mentioned to Professor Gangulee that you were trying to use the reserve funds to lower the rate of interest of primary societies?—Yes.

29493. Would you explain the system at present?—At present the reserve fund is invested outside and that reserve would earn an interest of 5 per cent. So our scheme is that as soon as the reserve fund of the society reaches 10 per cent of the normal working capital we should utilise the interest on the reserve fund towards the payment of the Central Bank's claim. I will give a concrete instance. Suppose, for instance, there is a society the normal capital of which is Rs. 1,000 and its reserve fund is Rs. 200. That reserve fund will earn interest at the rate of 5 per cent; that is Rs. 10. This amount of Rs. 10 will be paid to the Central Bank to meet its claim so that the members will have to pay Rs. 10 less for interest; so that on Rs. 1,000 they will have to pay Rs. 10 less which means that the rate of interest will be reduced by Re. 1.

29494. What is the lending rate of your primary societies?—12 per cent.

29495. If you utilise the reserve fund, it will go still further to reduce the rate of interest?—Yes.

29496. The main result of the working up to date is that your Provincial Bank is perfectly sound, the Central Banks are sound and your primary societies are weak?—Yes.

29497. Is there a maximum rate of dividend for the Provincial Bank and the Central Banks?—The maximum is limited to 12 per cent; but the maximum has never been reached; the maximum declared by the Central Bank has never been more than 8 per cent.

29498. *Prof. Gangulee:* But in some banks you have not declared a dividend at all?—Because the interest has not been realised.

29499. *Mr. Calvert.* You use in this Province the Public Demands Recovery Act to help you to recover amounts from defaulters?—Yes; it may be recovered as arrears of land revenue; it is under the Land Revenue Act; an amendment has been introduced under that Act.

29500. Is that much used?—Yes. The Registrar has to certify before that is put into force.

29501. Does that give results more quickly than when working through a liquidator?—In a good many cases it does.

29502. I gather from your replies to one of my colleagues that you pay your liquidators 5 per cent on recoveries?—Yes.

29503. That is an even rate throughout?—Yes.

29504. You have not tried to pay him a higher rate as the work proceeds, that is, 5 per cent for the first third, 7½ per cent for the second third and 10 per cent for the rest?—No, we have not tried that. In the beginning it is easy to recover and it becomes more and more difficult to recover as time goes on.

29505. Does your department co-operate to any extent with the Education Department? Do you help each other in the field?—No.

29506. You do not arrange for lectures in the normal schools and things of that sort?—In Berar, we do deliver lectures in the normal schools. The Berar Co-operative Central Institute sends its Inspector to lecture on co-operation. The idea is ultimately to use the schoolmaster for the work of writing of accounts of societies and do away with the Group Accountants' system.

29507. But is it not better, for instance, that the co-operative societies should work in the closest possible touch with the Education Department?—So far we have not considered that question.

29508. You expressed the opinion that the Government expenditure on co-operation was rather less than in other Provinces and you give the figure of Rs. 1,74,000 which works out at about Rs. 2½ per head. Is not that rather higher than, say, in the Punjab?—I do not know if it gives the same results on the working capital.

29509. Can you let us know, briefly, just to what extent Government does aid this movement? How does it aid the Federation at present?—At present the Government does not give any grant to the Federation.

29510. How many Auditors is it paying for?—Government is paying for 35 Auditors.

29511. Does it pay for the education staff, the Inspectors like those we have in the Punjab?—No.

29512. Does it pay for any special propaganda staff?—No; but last year Government made a grant of Rs. 3,000 to the Northern Districts Co-operative Institute and Rs. 2,800 to the Berar Co-operative Institute for lectures on co-operation illustrated by magic lantern slides, and this year we are giving a grant to the Berar Co-operative Institute for propaganda in connection with cotton sale societies.

29513. Do you take your staff, or send your staff, regularly every year to the agricultural farms?—No.

29514. Do any of them receive courses at the Agricultural College?—No; but I am thinking of that.

29515. *Mr. Kamat:* Speaking about the cotton sale society in Berar, you said the rates of cotton for the day were fixed secretly?—The actual settlement of the rate is done under secret signs.

29516. The rates fixed are the maximum for the day?—I have known of cases in which cotton has been sold at a higher rate than that which is supposed to be the ruling rate.

29517. Are these rates fixed arbitrarily or do they depend upon telegraphic advice from Bombay or from overseas?—They receive telegrams from Bombay and they take that rate into account in fixing the rates.

29518. If that is so, have you any agency to watch the ruling rate for the day; to see if the rate is much below what ought to be the rate according to the telegraphic advice, or the condition of the cotton market in Bombay for that day?—No; the cotton selling society has no such agency.

29519. The relief which this cotton selling society can possibly give to the producer is perhaps security so far as correct weighment is concerned and, perhaps also, the safeguarding of deductions?—Yes; that is all, so far.

29520. But it cannot ensure a fair rate corresponding to the rate which ought to prevail according to the Bombay and other markets?—No; it does not, because it has got no agency.

29521. In that respect, therefore, you fail to give relief to the producer?—Yes, in so far as the rate declared in the market is not in accordance with what it should be.

29522. Then have you considered whether it is feasible to maintain a telegraphic service or a cable service to ascertain the actual market rates either in America, or in England, or in Bombay and to give the benefit of that cable service to the people here?—No; we have not considered that.

29523. Supposing you introduced that, do you think it would be feasible to give the producer, the cartman who brings the cotton for sale, an approximately correct idea of what the cable advice in Bombay is? Could you, without much expense, maintain some sort of agency to give him the benefit of knowing whether the rate goes up so many points or down so many points, above or below the price fixed for the day?—I think an arrangement to get information about the Bombay rate would not cost much.

29524. Your department has not thought about that; you think it could be done?—Yes.

29525. *Sir Ganga Ram:* Are not the rates hung up?—Yes, after they are fixed.

29526. *Mr. Kamat:* They are fixed by some other people, not by you?—Yes.

29527. You know the process of fixing the rates under cover?—Yes.

29528. *Dr. Hyder:* Is there a wide variation between the rate prevailing at Bombay and the local rate?—Not very much, I think; the rates in the local

markets have to be calculated; the Bombay rate is for ginned cotton and it has to be converted into terms of unginned cotton and the freight charges and ginning charges are to be allowed for.

29529. They are the two items for reduction?—Yes, and also allowance should be made for the cotton seed.

29530. *Mr. Kamat:* Talking about Central Banks and the election of the Board of Directors, is there no method by which you nominate somebody on behalf of your department as one of the Directors and watch the proceedings of the bank? Supposing there were nine Directors, is there no procedure by which that can be done giving your department one?—No; it is not provided for in the bye-laws; the idea was that the Central Banks should actually manage its own affairs.

29531. One man on behalf of the Co-operative Department out of, say, eight or nine would not be much; he would merely watch and not interfere?—Generally we arrange to attend meetings of the Board of Directors; one of the members of my staff generally attends the meetings of the Board of Directors.

29532. Informally: he has no *locus standi*?—No, he is not a Director but he does attend on behalf of the department.

29533. You spoke of the pleader liquidator, are such men appointed liquidators because they are pleaders or because of their knowledge of the co-operative movement?—They are appointed because they know something about co-operation and because they know something about the law, and because we sometimes find it difficult to get other people to do it.

29534. What is your experience? Are these pleader liquidators more expeditious and better on the whole than other liquidators whom you may have appointed?—I am sorry to say my experience of some lawyer liquidators has not been very happy in the matter of expedition, because they say they have got their own case work to attend to; I have had to cancel the appointments of certain lawyer liquidators.

29535. That was due to their want of time, it was not with reference to their knowledge of law?—I was not concerned with the causes of delay; the main thing that confronted me was the delay.

29536. *Sir Henry Lawrence* How are they remunerated?—They are remunerated by a payment of 5 per cent.

29537. *Mr. Kamat* With reference to what has been said about spoon-feeding, so far as your knowledge of State aid to co-operative societies in other countries goes, for instance, in Holland, is it not the case that co-operative societies in that country receive greater aid from the State than in India?—I do not recollect now the details of the assistance given in Holland.

29538. Do you mean to say there is no State aid in other countries?—No, there is a great deal of State aid everywhere.

29539. So that if help from the Government is to be called spoon-feeding, that is not peculiar to this country?—No, as a matter of fact, State aid is given in every country.

29540. Nowhere has the co-operative movement grown without State aid?—State aid has been essential to the movement and has enabled it to develop on the right lines.

29541. You have paid a tribute to the non-officials who have assisted the movement, but in your oral evidence you have said that some of the primary societies started by non-officials have come to grief because those non-officials did not follow up their initial work and maintain the efficiency of the primary societies in villages?—Yes.

29542. Without the help of the non-officials in starting such societies, in holding conferences, and helping in other ways, do you think your movement would have spread as much as it has?—I do not think it would have spread as much as it has.

29543. And do you not think it would be too much to expect non-officials to stay in the villages, giving up their profession or business, simply to maintain the primary societies, train them up and look into their accounts?—Yes.

29544. The fact of the matter is, that there is not enough literacy in the villages to maintain the necessary efficiency?—No.

29545. For instance, in Berar you admit that the state of the co-operative movement is better than in Chhattisgarh, because the foundation is there?—Yes.

29546. It is not merely the non-official element; it is the foundation?—I do not blame the non-officials; I am blaming the system under which they have been made responsible for a number of things which they are not in a position to do.

29547. Does the lawyer element take sufficient part in this movement?—Yes.

29548. And do men from the colleges help you?—We have not been able to get many new recruits to the movement from the college people.

29549. Do you find that people who never go to the villages themselves nevertheless are prepared to criticise others for not going to the villages and doing social service in connection with the co-operative movement?—There has been a certain amount of talk of that kind.

29550. *Sir Ganga Ram:* How far has this movement tended to reduce the interest which moneylenders charge?—Do you mean generally speaking?

29551. Yes, generally speaking?—In villages in which there are co-operative societies moneylenders have reduced their rates of interest almost to the same rate as that charged by the societies in some villages.

29552 The rate charged by the societies is 12 per cent?—It is 12 per cent at present.

29553. Generally in the whole Province, with what percentage of the total indebtedness do you deal?—As I said, we deal with about 60,000 members.

29554. What proportion of the total credit requirements of the Province do you meet?—I have not got the figures, I have no idea what the total indebtedness of the Province is.

29555. Are not the Bombay rates hung up every morning in the markets, that is our rule in the Punjab?—Yes, they are hung up and the rates actually declared in the market are also hung up.

29556. You say all the details have to be worked out?—Yes.

In the Punjab we have a formula which every one knows; supposing the rate per *khandi* is 250, we deduct 30, divide by 10, and that is the rate for the *kapas*.

29557 Are you a member of the Central Cotton Committee?—No.

29558. Are you not a member *ex-officio*?—There was a proposal to make the Director of Industries a member, but I do not know whether that proposal has been accepted.

29559. To what do you attribute the fact that, whereas before 1899 there was famine and scarcity, there has been none within the last 25 years? Have you grown more food? I will put the question in a leading form. Is it not due to the fact that more money crops are now sown than before?—Yes, and there has been irrigation too.

29560. Irrigation has not materially increased the food supply, if you will pardon my saying so. Is it not due to the fact that money crops have been grown with the result that the people have money in their pockets with which to import food from other Provinces, and, owing to the extension of railways they have the means of importing?—Yes.

29561. To what extent does the Imperial Bank help you?—We have a cash credit of 4 lakhs with the Imperial Bank.

29562. On what security?—On the security of pro-notes of primary societies endorsed by the Central Bank.

29563. If you got 50 lakhs from the Imperial Bank on the same security, could you utilise it?—Not at present.

29564. To what extent could you utilise it?—At present we find that the money we have is quite sufficient for our requirements.

29565. You have sufficient money to meet the demand, and yet you say people often go to the moneylender as well as to you?—Those societies are not working very well, and therefore they are not being financed by the Central Bank.

29566. You could not utilise more money from the Imperial Bank if it were advanced to you on the same terms, at 5 per cent or 1 per cent above bank rate?—I could utilise some but not very much.

29567. To what extent could you utilise it?—At present we have got a surplus of 18 lakhs in the Provincial Bank.

29568. What fees do the Directors get for attending meetings of the Central Banks?—In a great many banks they get some allowance; in other banks they get nothing.

29569. It is honorary?—Yes. In some banks they get travelling allowances, their actual expenses and Rs. 2 or Rs. 3 a day, but that is so in very few banks; generally it is all honorary.

29570. *Sir Thomas Middleton:* When you were a student, did you pay special attention to the study of economics?—Yes, economics was one of my subjects.

29571. One often hears it stated that Indian agriculture suffers from growing industrial crops rather than food crops. You have had exceptional opportunities of seeing the position in this Province and I would like to hear what your view is. Have you seen any indication of agriculture having suffered because industrial crops are grown at the expense of food crops?—I do not think I have seen any.

29572. You have seen no indication of that? On the other hand, in this Province do you find that where industrial crops are grown the prosperity is greater?—Yes.

29573. When sales on commission are made by the cotton selling society to which you referred, is the rate charged the same as that charged by private agents?—The same.

29574. Then why do non-members make use of your society?—Because they feel they will get honest weighment and fair assessment of deductions; but they do not get any rebate afterwards.

29575. You told us you had seen a good deal of these two cattle societies which failed in the Raipur district. Can you indicate in any more detail than you have done in your note what were the reasons for failure? You say lack of interest, but that is a general statement. Do you think there was anything wrong with the rules adopted by the society?—I think so, to the best of my knowledge. I think the site selected was not very suitable.

29576. Unsuitable from the point of view of the stock or of the district? The district is one which has very poor cattle?—What I meant by the actual site was that I think there was some difficulty about fodder also.

29577. You are thinking of the actual site, the headquarters of the society?—Yes, that is what my recollection is.

29578. You state that a good deal of grass land was provided on favourable terms? Was it grass land which was useless?—No, it was not worthless grass land; it could have been used as fodder if cut in time; otherwise it was useful for thatching and other purposes. But I do not think that was the main cause. The members themselves were malguzars and resided about 12 or 13 miles away from the headquarters of the society.

29579. *Dr. Hyder:* Is it correct to say that the co-operative movement in the Central Provinces is weak in these two points, namely, defective organisation and defective education of the members? Are those the two main weaknesses of your movement here?—Yes.

29580. Take the point of education: what staff have you got below your Circle Officers or Inspectors? You have got only three?—We have got three Circle Officers and a Deputy Registrar. Below them we have got 35 Government Auditors.

29581. What provision do you make for the training of these people?—So far they have not been regularly trained, but for the last two years we have been holding training classes for them every year.

29582 For how long do they last?—About a month.

29583. Do you know that they devote 15 months to them in the Punjab?—Yes.

29584. And that they have as many as 15 books to study?—Yes

29585. Do you know that they have to familiarise themselves with law and rural economics in the Punjab?—Yes. But that is for people who are newly appointed; I am talking of the people who are already there and are required to take a sort of refresher course. In the case of a new Auditor, we do not put him into the actual work until he has taken a six months' course.

29586. Do you recruit from the graduates of the Agricultural College at Nagpur?—No.

29587. Do you not think that it would be desirable to have such recruits in your department?—Yes, I am thinking of that.

29588. With regard to the matter of liquidation, would you not enforce the principle enunciated by the Maclagan Committee of contributory unlimited liability so that an equal *pro rata* rate, levied from the rich and the poor, would help the cause of co-operation in this Province?—Yes.

29589. I understand that you are the final authority for sanctioning the liquidation of any particular society?—Not to sanction the liquidation, but only to cancel the registration.

29590. Who sanctions that? Who takes the initial step?—To cancel the registration of a society I do.

29591 Would you not like the liquidation proceedings to be taken away from the hands of these pleader liquidators and such like people and made over to the Deputy Commissioner of the district?—I do not know how far that would be feasible unless the Deputy Commissioner had an additional staff. With his present staff he cannot possibly undertake liquidation. Of course, a Tahsildar may be entrusted with one or two liquidation cases, but where there are a large number of cases he would never be able to deal with them. In Chhindwara, we had a large number of cases and the Circle Auditor had to tackle that job.

I am asking you this question because I understand that conditions in the Central Provinces and the United Provinces are similar, and there was a committee which went into the whole question and recommended this measure. Do you agree that the conditions are more or less similar to those in the United Provinces?

29592. To proceed to another matter Have you got any caste societies based on caste panchayats here?—No.

29593. What is the composition of the population of your villages? Are they tribal villages or are they mixed?—They are not always tribal; they are really mixed. Of course, in certain tracts there might be Gond villages entirely.

29594. It seems to me that you have got here a certain moral fibre which you can weave into your society?—In Mandla, for instance, we have got Gond societies We have not specially organised these societies for the Gonds only, but because they form the predominant element of the population of that district we have formed these societies. We have not specifically used the caste organisation for co-operative societies.

29595. *Prof. Gangulee* What education have the local instructors had who work under your co-operative institutes?—They have all been recruited more or less from the present staff of banks

29596. What salaries do they draw?—The local instructors in Berar draw from Rs. 35 to Rs. 45 or Rs. 50 and in the Central Provinces they draw Rs. 40 I think.

29597. Do they sit for any departmental examination before they are appointed?—No.

29598. A reference has been made to co-operative methods in other countries. Would you agree with me that while State aid is necessary, the stimulus in the co-operative movement must come from the people?—The impulse for working co-operative societies on proper lines must come from the people.

29599. Examples of Ireland, Italy and other countries bear out that fact, do they not?—There must be self-help from within.

29600. *Mr. Calvert:* Under this unlimited liability system in societies under liquidation, have there been cases in which a member called to pay his contribution, not his debt, has had to sell or encumber his land?—In certain instances, that has been the case.

29601. Have those cases been at all frequent?—Not frequent I should say.

29602. Would you say there were about a dozen cases in the Province?—There might be more; I cannot say off-hand. There might be two dozen cases at the most.

29603. Those are cases in which the losses have exceeded the reserve funds?—Yes, because the reserve fund is taken first.

29604. And then the personal securities are called upon?—Yes.

29605. Of the actual borrower?— Yes. But in many cases one member may be the surety of one or more members, and in practice the responsibility of sureties is not enforced always because they are all inter-linked.

29606. So that you have had cases in which the reserve fund has been too small for the losses and there has been no paid-up share capital?—Yes.

29607. And when the personal sureties have not been able to pay up, you have had to fall back on individual liability?—Yes.

29608. Has that resulted in any inequality between those who had land to encumber and those who had not?—I think so.

29609. There have been actual cases in which a man has been penalised because he happens to have more property?—Yes; I know of some cases.

29610. Are these cases very rare?—I can think of only 4 or 5 cases.

29611 *The Chairman*: If you know of 4 or 5 cases, is it not quite possible that there may have been 40 or 50? I am trying to get from you what your figure of 4 or 5 really means?—Yes, that is possible. I am only speaking from recollection.

29612. Is it likely that there are a great many more than you have heard of?—There might be about a dozen.

29613. Is that the sort of figure that you expect to find?—It may be that in the course of liquidation many more cases might come up; I am speaking only from my own personal knowledge.

29614. *Sir Henry Lawrence*. Are the clerks and Auditors paid at a rate which will ensure honesty and intelligence?—I think the rate is adequate to secure honesty so far as the Government Auditors are concerned.

29615. And intelligence?—They seem to be all right for the routine work. I should like to have their pay increased in order that we may have a better type of man.

29616. *The Raja of Parlakimedi:* Do any of your societies in rural areas take up education or village sanitation?—No. I know of one case only where a village society inserted a by-law laying down that every member shall send his boy to a school. That is about the nearest approach I can think of.

29617. As regards sanitation? –No. I have, however, known of a society which has sometimes given a contribution for the purchase of quinine. As a matter of fact, I know of two or three cases of that nature.

29618. Has any attempt been made to supply improved implements or seeds?—Not by the society as such, but loans are advanced for the purchase of implements, and I know of a society in Nagpur which is going to purchase some implements jointly on behalf of the society as such.

29619 Do not societies undertake to get seeds from agricultural farms and try to distribute them among their members?—We have got some special seed societies, but societies as such do not jointly take seed from agricultural farms. But we have separate seed societies. They are really branches of the credit societies; their credit and seed business is kept separate. We have got 65 societies like that.

(The witness withdrew.)

The Commission then adjourned till 11 a.m. on Friday, the 21st January, 1927.

Friday, January 21st, 1927.

NAGPUR.

PRESENT:

The MARQUESS OF LINLITHGOW, D.L. *(Chairman).*

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I C.S.

Sir THOMAS MIDDLETON, K.B.E., C.B.

Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.

Sir JAMES MACKENNA, KT., C.I.E., I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

RAJA SRI KRISHNA CHANDRA GAJA PATI NARAYANA DEO OF PARLAKIMEDI

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Mr. C. U. WILLS, I.C.S.
Sir SHANKAR MADHO CHITNAVIS, KT., I.S.O. } *(Co-opted Members).*

Mr. J. A. MADAN, I.C.S.
Mr. F. W H. SMITH. } *(Joint Secretaries).*

Mr. R. G. ALLAN, M.A., Principal, Agricultural College, Nagpur.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(*a*) (1) *General features.*—Research and investigation may be classed as—

(1) General, in that it is directed towards the improvement of the main staples of the country or in as far as it relates to the solution of soil, nutrition and like problems, which provide a more accurate appreciation of the condition under which the cultivator works

(2) Local, in that it is directed towards the betterment of crops of more restricted growth or deals with the local problems peculiar to a Province.

Financing.—The first of these should be financed by or assisted in their finance by the Central Government. The second, together with agricultural education and agricultural extension, should be direct duties of Local Governments.

I do not wish to imply that Local Governments should not be expected to finance work in the first group. This they should certainly do. Indirectly their expenditure under extension would form a part of the general scheme, of which the final goal is the betterment of the cultivator.

I feel, however, that research and investigation are absolutely essential in the first group and I do not think that all Local Governments, partly on account of lack of funds, partly from a lack of appreciation of its importance and partly as the outcome of the play of party politics, can be counted on to realise the importance of such research work and may thus be unwilling to find the staff and the money for objects in which they may be unable to see an immediate cash return.

The first group should be financed from a central source.—

(*a*) because they are subjects of interest to the welfare of the country as a whole,

(*b*) because Local Governments cannot, for the reasons given above, be relied on to carry out their part of a general scheme of research and improvement;

(*c*) because the mere fact that the Central Government was in a position to help those who desired to help themselves would itself stimulate local endeavour and a willingness to co-operate in any general work.

Organisation.—The constitution of a comparatively small, central body under the Government of India consisting of the Minister for Agriculture (which should be a separate portfolio, the Agricultural Adviser, certain officers selected by Government and the Presidents of the Committees noted below. The duties of this body would be the allocation of funds to the Crop and Research Committees and offering advice to the Government of India in matters relating to agricultural enactments affecting export and imports or legislation dealing with agricultural interests affecting the country as a whole.

It should in no way seek to dictate to Provincial Governments.

Its working funds could be secured by the levy of a small export cess, ranging from one anna to four annas per cwt, in accordance with mass of the export and the intrinsic value of the article, on wheat, rice, oil-seeds and cakes, fibres (exported or locally worked), hides and bones

The annual income derived from the above would be controlled by the Central Body and would not be subject to lapse, if not entirely spent in any one year. Its distribution would be governed by the amount of the income provided by each crop cess, by the general importance of the crop to the country and by the character of work in hand.

Co ordinated in this Central Body and represented therein by their respective Presidents should be a number of Sectional Committees, dealing with the following wheat, paddy, oil-seeds, fibres, animal nutrition and improvement and miscellaneous scientific research. Each of these with the exception of the last should, as in the Indian Central Cotton Committee, consist of experts, growers and the trade from each Province interested in the particular section. Its functions would be—(*a*) the provision of direct research facilities, (*b*) the rendering of assistance to Local Governments either by the provision of special experts, the provision of increased staff under a Provincial Government expert or the financing of sound Provincial schemes, and (*c*) investigation in marketing and export problems. Its working funds would be provided by the Central organisation and the funds allotted would be the property of the Sectional Committee. Each committee would be directly advisory to Provincial Governments in matters relating to its own section and would co-ordinate the work in progress in each Province. In view of their control of funds, there would be a greater tendency to accept their advice and suggestions.

I am of the opinion that the institution of the Indian Central Cotton Committee with its own income has done a great deal to stimulate the improvement of this crop in several directions and that the work of the Coimbatore Cane Breeding Station, another example of centrally financed research, is affecting a striking improvement in sugarcane. I would press for somewhat similar developments on like lines in other important crops and lines of research.

A Central Advisory Board of Agriculture or Central Advisory Crop or Research Committees are likely to be valueless, unless supported by funds over which they have the entire control of distribution.

(*b*) (1) Plant breeding and botanical research has been hampered in this Province by lack of expert staff. It was decided some years ago that at least two Botanists were necessary. This Province only had one up to 1925. The existence of two at present is the outcome of the constitution of the Indian Central Cotton Committee, who meet the pay of one of these.

(2) No real investigation or progress has been possible in horticulture, fruit and vegetables in particular, for lack of expert assistance. The only man with any pretentions thereto was axed by the Local Government after the Reforms were introduced.

(3) Soil investigation.—Practically no work has been possible on soil physics in the absence of staff and equipment.

(4) Agricultural implement investigation.—The appointment of an Engineer is only recent and this officer has since resigned on account of the unsatisfactory conditions of this service. The shops and outfitting generally are of make-shift character and money has not been available for the class of work which this most important branch of investigation demands.

MR. R. G. ALLAN.

(*c*) (1) Soil physics, in particular the factors governing tillage operations.

(2) Agricultural engineering, implement design,

(3) Oil-seed crops generally, conditions controlling growth and yield and quality improvement. Except for a certain amount of selection in linseed and ground-nut, there has been but little field attention given to this important group of industrial crops.

QUESTION 2.—AGRICULTURAL EDUCATION.—In answering the questions given in this part of the Questionnaire, I have divided agricultural education into four sub-sections –

(*a*) Collegiate or advanced.

(*b*) Vocational or designed as a finishing course for boys who have completed some form of general education.

(*c*) Pre-vocational or conducted as part of rural school general education.

(*d*) Short course or specialised adult training

My personal belief is that a real demand for agricultural education in any form will only be evident, after the landowner and the cultivator realise that there is something to be gained by improved methods and that it will benefit their sons to learn these In other words, the most effective form of agricultural education in its widest sense at present is active demonstration and extension work among the adult agricultural population, impressing on them the value of a change in practice, inducing a higher standard of living and providing the cultivator with the wherewithal to pay for a better education for his children. Twenty years ago there was no Agricultural Department worth describing and education of (*a*) type attracted men seeking Government service only, men often too poor to go to an arts college, men who more often than not had to be subsidised to come and certainly men who had not the land or the capital to make such an education pay, while attempts at (*b*) were an entire failure, the malguzari class of that day being recruited under official pressure and under the stimulation of the hope of securing some minor billet at the Tahsildar's Office or the like There was not a vestige of popular enthusiasm.

At the present day, extension work has advanced very considerably. Though many seek collegiate education with the intention of securing employment, the percentage attracted by a scholarship is much smaller and the number who seek such education for itself and who possess the wherewithal to apply their knowledge is increasing. At the same time, the value of forms (*b*) and (*c*) is beginning to attract attention in the more agriculturally advanced parts of the Province.

(i) (*a*) Yes. (*b*) and (*c*) can be met as demand now stands, but in any form of an extension of (*c*), in particular, the greatest difficulty would be trained teachers.

(*d*) Can be met on Government farms and on the College farm. The principal short course demand is in Agricultural Engineering in tractor and oil-engine instruction.

(ii) At its present rate of growth, the Agricultural College will have to be extended. This, however, does not imply increased building, except in the hostel, as the removal of the College of Science, which takes one wing of the Agricultural College building would provide this.

There are indications that the class of pre-vocational education now in force at Hoshangabad will cause a demand for like schools in that area. The existing school requires considerable extension.

(iii) I do not think that a strict recruitment from agricultural castes is essential though, on the whole, teachers recruited from rural conditions would be preferable to town bred men. The Agricultural College seldom accepts would-be students who are of city up-bringing as these but rarely take kindly to agricultural work and conditions.

(iv) At the present day, there is a distinct increase in the demand for college education, the outcome of University affiliation. There is also an active demand for the pre-vocational course (middle school) now given at Hoshangabad. At both these, the attendance is as numerous as can be expected and would be greater with more accommodation.

Attempts at education of type (*b*) have to date failed to attract the class for which it is organised. The father who appreciated education wished his son to go further than these permitted. The father who did not had still to learn that agricultural improvement

provided anything concrete and had in consequence more use for his son as a labourer. One of these schools was converted to type (*c*) and the other, which was in a generally backward area, was closed.

(v) This question is difficult to answer.

At present, there are only two living centres of agricultural education. Those referred to use the College and middle schools. In the former up to the present the majority seek education so as to secure employment (Government, if possible), though the number who do so with the intention of private application later is increasing and a certain number of the younger men are undoubtedly induced to seek employment so as to get experience and with the hopes of settling down later on their own land.

With an increasing demand for admittance to the College the tendency is to select men who have the land and capital to make them independent of service, should this not come to hand.

In the latter case, the school as at present constituted, has not been going long enough to state what happens after, but a reasonable number undoubtedly will go back to work on their home farms.

(vi) Yes.

(vii) I do not think so in as far as the existing institutions are concerned. As noted above, courses for middle school boys with a predominance of agriculture and courses of purely agricultural character for boys who had completed this standard of education have not proved popular; but I do not think this was caused by an unsatisfactory type of course.

(viii) (*a*) *Nature study.*—I regard as an excellent opening for the younger classes of rural schools, but its value is very closely associated with the personality of the teacher. It is difficult to teach well and unless well-taught it is not of much value. The type of teacher available is poor and is too dependent on memory and the text-book. Many years ago, I outlined a course of nature study for the Education Department on the lines I had at one time used in England, but it could not be carried out for lack of teachers of sufficient quality to instruct.

(*b*) *School plots.*—The school plot of about one to two acres area, if properly managed is, I think, large enough for all the agricultural work, which a rural school time-table would admit of and which boys of that age are capable of working.

It can be designed to provide nature study material for the younger classes and instruction in the character and cultivation of the best local crops and can afford ample practical work of a character within their physical capacities. The best of these in this Province is at Rajnandgaon. It is in many respects like the type illustrated at Poona, during the Agricultural Show, though originated locally. The chief feature here is that the class is voluntary being done out of ordinary school hours and only the sons of agriculturists are privileged to join it. One of the masters manages the area and agricultural training is given by an Assistant of the Agricultural Department. Bullocks and labourers are employed to do the heavier preliminary tillage. Successful school plots, like nature study, demand the personal enthusiasm of a master. In order that teaching should be effective, such a master should receive a couple of years' training at the Agricultural College.

(*c*) *School farms.*—I do not think these are suited to rural school needs and conditions. The term implies a fair area, five acres at least and the maintenance of livestock. It also demands more management ability on the part of the master and is hence more open to failure. Agriculture on this scale appears to me to be out of place in an ordinary rural school. A school farm in my mind is to be associated with a place giving definite vocational training to boys after the middle school is completed. In this Province, this could be best managed on existing Government farms if the demand arose. I am of the opinion that agriculture at schools should be directed towards giving a boy an interest in rural life, in observation, in studying cause and effect and in the advantages of certain crops and certain methods, rather than in intensive teaching of agriculture as an examination subject. I think the well-managed plot effects this as well and indeed better than the larger scale farm.

I do not believe in teaching text-book agriculture but in training the rural lad to acquire an understanding of what his father does, why he does it and how he might do it. I would prefer it to be regarded in schools as a form of recreation rather than a class room subject—a form of play, stimulated, may be, by prizes, rather than a form of work.

MR. R. G. ALLAN.

(ix) The majority of those who have secured a Diploma or certificate at the Agricultural College are in Government service either in the Central Provinces or in other parts of British India or the Indian States. Very few are engaged in other than agricultural work.

Statistics.

Total passed through the courses given at the College since 1906—289

Employment—

In the Agricultural Department, Central Provinces ...	116
In other Agricultural Department in British India ..	23
In Indian States Agricultural Departments ...	44
In other Government Departments in the Central Provinces	17
In other Government Departments outside the Central Provinces	7
In private farming .. .	10
As estate managers .	12
In other trades in some cases linked with Agriculture ...	9
Unknown	31
Total ..	289

(x) Agriculture is not popular—

(*a*) Because the annual income is uncertain.

(*b*) Because the standard of living of this class is higher than that of the cultivator and, as farming returns now stand, the middle-class youth finds it more difficult to make a living which provides needs.

(*c*) Educated as he has certainly been in a town for some years, the conditions of village life have no great attraction.

I do not see how it can be made more attractive, unless it can be made more paying.

Till comparatively recently and even now to a large extent, the middle-class youth, who comes to an Agricultural College, has not the capital and land behind him to allow of farming on his own account. The parents who appreciate education are not usually the more influential cultivators and resident malguzars whose sons might have the means to apply their agricultural knowledge gained at College. To a considerable extent, those who see a value in education are landless or have insufficient outlet in this direction.

(xi) Considerable attention is given to practical and technical ability at the college. This is, however, limited by the other demands of the course. One of the chief difficulties in really equipping youths is the absence of well-run private farms, as those found in England, on which a college trained student can work under a capable man after completing his course of study. The only way this difficulty can be met is by the inclusion in the departmental cadre of an increased number of probationary posts possessing no claim for permanent appointment. These would allow of the inclusion of more passed students for a couple of years training on Government farms and thus fit them better for private farming or as managers

I receive from time to time applications for home farm managers, which are difficult to meet, as in spite of the stress laid on technical ability, students straight from College lack the experience required.

(xii) The education of the adult agriculturist is a matter of persistent demonstration on the part of Agricultural Assistants. A flying visit however attractive has but little if any lasting impression. Frequent lantern lectures, preferably, cinema, are of assistance.

For accessible villages organised visits by the use of touring motor lorries, effectively equipped would be of value, as these would permit of the staff covering a wider field and visiting a village more frequently.

The education of an adult agriculturist must be largely of practical type, mere talking is ineffective.

I am of the opinion that education generally in rural tracts would be stimulated if parents saw that their children earned something at school, even if it were only two or three annas a week. I was struck by the utility of some of the articles made in village schools as shown at Poona. A larger proportion of time in a village school day

should be devoted to the training of the hand and eye. Children's output whether in the form of plot produce or their manufactures or its cash value should return to the children and hence to their parents as ocular proof of the value of the education.

One of the first steps towards effective adult agricultural education is the encouragement of village or small circle agricultural associations, each owning its own demonstrational plot, where approved methods, better seed and better implements could be demonstrated to the Circle Association members and others. If we can only get some enthusiasm created for co-operative action very considerable advances in many directions would be possible.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) I have stated these in paragraph 87 in the *Memorandum on the Rural Conditions and Agricultural Development of the Central Provinces and Berar* (*see* page 10 above).

(*b*) As outlined in paragraph 89 of the same (*see* page 11 above), I think that the ideal to be aimed at is the formation of small Circle Associations each possessed of its own demonstration plot worked under the guidance of the department. Such plots would greatly facilitate demonstration work and the meetings of the association would induce free discussion and interchange of views.

(*c*) A cultivator will accept advice when he is convinced that it is sound and if it is not likely to involve much capital investment and if it is practically proof against chance of loss. The spread of the use of pure seed is an example. He is also more likely to accept advice, if he has personal faith in the adviser. Some Assistants have a much greater influence than others. It is essential to be certain before giving advice. A bad bit of advice acted on and proved bad has a very damaging effect.

In many cases the value of technically sound advice is influenced by other economic factors. Deep ploughing may be excellent, but requires better bullocks than the cultivator possesses. Transplanting paddy may be profitable, but fragmented holdings and the consideration of the best use of his labour through the year may cause the cultivator to decide against it.

Improvements which involve capital expenditure are more difficult to introduce. The demonstration plot may show conclusively that a certain dressing of cake or fertiliser is highly profitable but the cultivator hesitates. I am of the opinion that in cases of this kind it is well worth putting down one or two plots in a village, supplying the cake or fertiliser free the first year, or giving the cultivator a guarantee against financial loss in the first instance.

(*d*) The most striking example of the failure of perfectly sound technical improvement to make headway is the transplantation of paddy in Chhattisgarh referred to in paragraph 108, sub-section (*b*) of the provincial memorandum (*see* page 14 above) in which I have outlined the causes of its failures to make good.

Examples of successful demonstration work affecting agricultural practice are—

(1) Single seedling transplanting in place of bunches, in areas where transplanting already existed. The obvious saving in seed and the greater outturn with no additional cost has helped this.

(2) The marked increase in deeper cultivation and the use of the inversion plough in the cotton tract of recent years—*vide* paragraph 115 (*see* page 17 above). The causes leading to this are intensive demonstration, the introduction of ploughing matches, the fact that the sale of ploughs was taken up enthusiastically by Agricultural Associations and the replacement of the finer model English ploughs by hardier and cheaper, even if more clumsy and less well-balanced, iron ploughs of Indian manufacture. The rate of introduction was also largely aided by plentiful money, the outcome of high cotton prices.

(3) The introduction of line sowing of *kharif* crops in the north-west of the Province in place of broadcasting. The spread of this is, I think, the outcome of intensive village demonstration, aided by the cost of labour, in that line sowing reduced this by allowing the use of hoes, and the high prices of cotton.

QUESTION 4.—ADMINISTRATION.—(*a*) I have indicated this under research. I am of the opinion that the Government of India should aid Local Governments in research investigation relating to the conditions of growth, improvement in yield, and

quality and the marketing and export of the main staples and should finance investigation into the problems affecting general agricultural progress which are not likely to be popular lines of expenditure by Local Governments. I have outlined the organisation I think best.

(*b*) Assuming the organisation outlined, it might be desirable to maintain under the Central Body and paid by the Government of India a certain number of highly specialised experts who could be placed at the disposal of the sectional committees or bureaux as investigation demanded, being utilised by them either at their main research centres or in the Provinces. Some of these could be found among the officers now in the Provinces and appointed by the Secretary of State; but I do not think that Local Governments would favour a wholesale withdrawal of their most experienced officers so as to create a special central corps

(*c*) (ii) The Railways existing and under construction in this Province, I think are fairly adequate for its present needs.

There are certain anomalies in freight rates, which deserve attention. Cakes declared for manurial purposes are transported at a lower rate than the same cakes to be utilised as cattle food.

(iii) The main roads of this Province are on the whole good, though many are handicapped for use in the rains by being only provided with low level causeways at river crossings. A good deal of improvement in this respect has taken place in recent years. Bridging of high level causeways are however needed on some of the bigger rivers. With the increase of heavy motor traffic on these roads, it will be necessary for the State to spend more on upkeep.

There is a considerable need of secondary feeder roads so as to permit of easier access to more of the villages in the interior. Road communications are probably weakest on the plateau areas, specially east and west

QUESTION 5.—FINANCE.—(*a*) The principal forms of agricultural finance are seed and the expenses incurred in weeding and harvest of *kharif* crops.

It is difficult to suggest any possible improvement on the source of such loans, until the co-operative spirit takes hold of the cultivator and co-operative societies and Circle Agricultural Associations are living bodies.

The State offers in limited amounts *taccavi* loans for manures, implements, seed and land improvement These are tangible, the first three can be supplied in kind and expenditure or non-expenditure of a loan in the last case be noticed In financing crop operations the security of use for the purpose for which lent would be difficult.

I doubt if the cultivator is educated to the use of cheap credit. The easier it is to borrow, the more he tends to misuse the loan and increase his borrowings.

(*b*) The chief objections to the *taccavi* loan, which might be met by Government are—

(1) The delay which occurs between the application for a loan and the receipt of the value of the loan by the borrower.

(2) Rigidness with which payment is enforced without regard to the possibly temporary financial stringency of the borrower at the time at which payment is due. This I realise is difficult in view of the laxness in repayment inherent in the cultivator and encouraged by the *sowcar*.

If *taccavi* as a means of financing agriculture was to be extended, a special officer dealing with these in each district would probably facilitate business.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) (1) Unproductive borrowing to fulfil social requirements.

(2) Financing for seed and crop cultivation and cattle.

(3) Land improvement.

(4) Manures and implements (chiefly *taccavi* through the Agricultural Department).

(5) After years of low crop returns borrowing to meet immediate necessities of life.

(ii) This I have dealt with in paragraph 47 of the provincial memorandum (*see* page 6 above).

(iii) The high rates of compound interest attendant on borrowing, ***vide*** paragraph 49 (*see* page 7 above).

MR. R. G. ALLAN.

The fact that the biggest proportion of borrowing is under (*a*) (i) (1), while the surplus cash after meeting the family budget demands is small.

The tendency of the *sowcar* or moneylending malguzar to allow loans to mount up so as to secure a firmer grip on the borrower or tenant.

(*b*) The prevention of an unlimited accumulation of debt. The introduction of a measure like that of the Deccan Agriculturists' Relief Act in these Provinces.

Any attempt to relieve the agriculturists' burden of debt must be accompanied by measures to prevent his accumulating a fresh unproductive debt. Unless this can be done very little is gained.

(*c*) One realises that the right to mortgage land supplies an efficient business farmer with the means to secure working capital; but in view of the fact that the right to mortgage in India would be largely employed to secure a loan for an unproductive cause, it appears doubtful policy to extend the right of mortgage. The majority of tenants are occupancy tenants without such rights. The right to mortgage might be restricted to limitation of this right to the mortgage being effected through recognised or Government controlled land mortgage banks.

A great deal of the poverty and indebtedness of villagers arises from the fact that many villages are held by malguzars who have no interest whatsoever in agriculture and only regard their village and tenants as potential sources of income to be derived from loans made to them. In other words they use their villages to extend their lending business. There is a very great deal of difference between the character of a village where the malguzar is a resident cultivator and a village owned by the absentee moneylending type. The misuse of the malguzari system of tenure (I believe outside the Commission's terms of enquiry) is one of the causes, if not the chief cause, of backward agriculture, slackness, lack of thrift and accumulated indebtedness and the difficulty the department meets in making advance. Any action which strengthens the position of the non-resident land-grabbing malguzar who has no real interest in agriculture as such will be fatal

QUESTION 9.—SOILS.—(*a*) (i) A great deal of the heavier black soil under *kharif* crops or garden crops, in at any rate the Nagpur district (or areas of 35" rain and over), would benefit by better drainage during the monsoon. The effect of underdrainage on the College farm and elsewhere has been most marked. Experiments in the cheaper form of mole drainage using tractors are being started.

(*b*) (*i*) This can be shown to the Commission on the College farm.

QUESTION 10.—FERTILISERS.—(*a*) Yes. In garden and irrigated wheat crops, sugarcane, oranges and cotton.

(*b*) I have not come across much of this; most of the fertilisers, in fact probably all, used in the Province are secured in the crude forms and not made up as mixtures. The only fertilisers used at all by the general public are ammonium sulphate and nitrate of soda

(*c*) I believe in its liberal use on selected crops and areas at centres, where its use is advocated. In these demonstrations a fertiliser should be supplied free. It represents an example of speculative investment in the cultivator's eye and one which he is not likely to put capital into in the first instance. Such plots should be laid out on private growers' land and carefully watched by the department. A large series of these, using ammonium sulphate, were tried this year.

It is most important that everything should be done to keep down overhead charges and put the fertiliser at the disposal of the grower at its lowest possible cost. In the present year we had in one area of the Province every expectation of a 100 tons demand for ammonium sulphate. The special packing in quantities of one maund and the distribution agency adopted by the company added roughly a rupee per maund to the cost on the previous year's price. The result was a falling off of quite two-thirds of the expected sales.

A rupee per maund may not appear much to a company, which thinks in lakhs but it has a very profound effect on a would-be user, hesitating on the brink of, as far as he is concerned, a considerable capital investment. Rises in price for any cause at the moment an article looks like taking on are fatal.

(*d*) *Karanji* cake for cane in the plateau. The use of other cakes in the Wainganga valley, ammonium sulphate in the nort-hwest of the Province.

MR. R. G. ALLAN.

(*e*) No. A good deal has yet to be done. Stated briefly, nitrogenous manures a the most effective and then phosphatic. Potash manures have on the whole produc little result. The paddy crop responds more readily to the general natural manures cattle-dung and poudrette and to green manuring with or without phosphates. Cotton best manured by comparatively light dressing of cattle-dung, supported by lig dressings of nitrate of soda or ammonium sulphate, applied when heavy rainf has checked nitrification and washed out the nitrates which are very freely form in June and early July Cotton can also be profitably manured by mixtures of nitr genous and phosphatic fertilisers, but the application of fertilisers on any lar scale to cotton is somewhat speculative and depends very much on the character the season. Wheat, the vast majority of which is sown as a dry crop, does not respo to fertilisers, which are almost invariably applied at a loss.

Sugarcane answers to application of ammonium sulphate applied with cake as t dressings. On certain soils the limiting factor of growth has been absence phosphates.

QUESTION 11.—CROPS.—(*a*) (*i*) *Improvement of existing crops.*—The work progress in the department is, I consider, satisfactory, when taken in consideratic with the staff which has been and is at its disposal. To get thoroughly effectiv improvement here should be a Botanist for cotton and fibres and another f oil-seeds, a third for wheat and paddy and a fourth dealing with the improvement the pulses, fodders and millets.

(ii) *Introduction of new crops.*—There have been several satisfactory introductio of new crops, *vide* paragraph 112 of the memorandum (*see* page 16 above) other tha fodder crops Little or no progress can be said to have been made in these la though a number have been tried. *Berseem* is the best introduction, but is handicappe by lack of cold weather irrigation facilities and cost of seed. Of the seed crop ground-nut in view of the fall in the price of cotton has the biggest future before it

(iii) *The distribution of seeds.*—The means at present adopted to increase th supply of pure seed from the stocks available at Government farms are recorde in paragraph 88 of the memorandum (*see* page 10 above).

The ideal would be a central seed farm belonging to each Circle Agriculture Association—the seed of this being in the next year grown by certain members of th association acting as seed farmers and in the following available for seed in th surrounding area.

The original plans on which the Seed Unions of *roseum* were established were similar in principle - a central private seed farm supervised by Government agenc supplied good quality seed to a number of seed farmers who formed the Seed Union On these seed farms quality, it was intended, should be controlled by Union agencies The present existing number of individual seed farms, many of which are not large throws too great a stress on the department's supervision. In fact it is doubtful if the purity of the seed can be properly maintained on a number of these, i particular in cotton, where cross fertilisation and the condition of ginning both tend towards the falling off of quality. On the introduction of a new cotton steps, I think, will have to be taken to concentrate the new variety on certain blocks of country and even to induce the replacement of existing cottons in those selected tracts by guaranteeing growers against any loss This will be necessary to ensure purity and to permit of the securing of a better price on the basis of staple.

(iv) *Prevention of damage by wild animals.*—Wild animals in particular pig and jackal do a considerable amount of damage to sugarcane, ground-nut and *juar* each year A great deal of discussion has taken place on this subject

Pig-killing clubs have been constituted in certain places, though it cannot be said that they have done much. There has been a considerable demand for an increase in gun licences. The issue of licences has in general resulted in the rapid extermination of black buck and the like but not of the more personally dangerous pig. The right to kill off pig lying up in forest blocks might help in areas adjoining Government forest, which are undoubtedly open to being severely harassed by these animals.

Cane usually grown in small blocks can be adequately protected by woven fencing and there is a steady expansion in its use.

Another means of defence has recently been developed in the case of ground-nut. At certain places by means of co-operative action all the ground-nut areas of several growers have been concentrated so as to form a single block, thus rendering protection easier and distributing the effect of damage.

It is difficult to suggest or enforce means of protection, unless some spirit of self-help and co-operation is in evidence. The villager recognises the cause of damage, but is as untrained in taking co-operative action against a common foe as he is in any other kind of organisation demanding co-operation. Given co-operative action, I am of the opinion that any of the wild animal pests would be held in check.

(*b*) The only heavy yielding food crop which will grow in these Provinces and is not grown is cassava. It is probable that the difficulty accompanying extraction and preparation as compared with the grain crops tells against its wider use in India.

(*c*) These have been recorded in paragraphs 112 and 113 of the memorandum (*see* page 16 above).

QUESTION 12.—CULTIVATION.—(*i*) Greater depth of primary cultivation is desirable in particular in *rabi* crops and to some extent in garden crops. In *kharif* crops depth may result in delayed sowings and in the absorption of too much rain in the environment of the seedling. Apart from its definite need in land infested with *kans* or *khunda* it is less essential under rain sown conditions. Cultivation to a depth 6" to 7" once in four to five years in preparation for a late sown crop in the rotation, as *juar* for grain, with 4" to 5" in the other years in preparation for crops like cotton, ground-nut, *juari* fodder or *sann*, in all of which earliness is a factor of prime importance, appears to me to be correct practice.

My opinion is that it is the Indian cultivator's implements and power rather than his system of tillage which are to blame for defects in his seed bed preparation. Another factor, which affects the efficiency of his work, is the character of the monsoon in his locality. The quality of the cultivation done for the *rabi* crop, for example, in different parts of the Province, is closely associated with the rainfall and the number of working days in July and August.

The cultivator in a *kharif* area realises that though he may be satisfied with 4" cultivation as a general rule deep work at intervals is necessary, but till recently the only implement he had was a ponderous wooden plough requiring 3 to 4 pairs of bullocks and doing but little in a day and in consequence he restricted depth cultivation to about once in 10 to 12 years.

A cultivator in a *rabi* area realises that a fine mulch 3" to 4" deep is desirable for his wheat, but in an unfavourable cultivation season he cannot attain this with only the country plough or *bakhar* to aid him.

A common defect of *bakhar* cultivation for the *kharif* crop is the provision of too fine a surface soil and in consequence a tendency for the rains to consolidate the surface, creating, if drying, a crust, which handicaps germination, but with only a *bakhar* (bladed harrow) at his disposal, it is difficult to avoid this defect in preparation.

The improvement of the implement at his disposal is not an easy matter, as on account of the smallness of his holding and the low duty thereby derived from several implements utilised for different jobs, he is not in a position to invest economically in implements which by reason of their functions would help him to overcome his seed-bed defects.

(ii) The value of rotation is, I think, realised and, when not applied, the non-application is governed by some climatic or economic factor. Thus in the paddy tract the only possible main crop on large areas is paddy and here, where the soil permits, the cultivator takes a catch crop, more often than not a pulse. In the wheat tract wheat often goes year after year on the same part of the field and pulse on another. The reason they are not rotated is that at the close of the rains the first-named area becomes workable first and in consequence the mulch needed for wheat is procured. The area given to gram remains wet, and the cultivation which can be given is in consequence coarse and unsuited to wheat. Over wide areas of the wheat tract, a mixture of wheat and gram is common and in others the crop rotates with pulse and linseed.

In the cotton tract, the value of cotton over other crops has been so marked that there has been a natural tendency to reduce the character of the rotation and concentrate on a larger percentage of the money crop. With the fall in the price of cotton and the expansion of ground-nut, it is probable that a return to a more sane rotation embodying cotton, *juar* and ground-nut will be in evidence.

MR. R. G. ALLAN.

QUESTION 14.—IMPLEMENTS.—(*a*) and (*b*) This is in part dealt with in paragraph 99 of the provincial memorandum (*see* page 13 above). Few implements of Western manufactures to-day are suited as they stand to Indian needs, even the needs of the relatively large farmer. The present inclination is to invite the Indian agriculturist to step over the last 150 years of steady evolution in machine development and machine sense, and to expect him to welcome and to use effectively a product of the nineteenth century invented and fashioned to different economic conditions. Many of the features of even the plough are additions to speed its working or to make it easier t handle. They have their advantages but they add to its price and increase its delicacy and are open to misapplication by the novice without affecting the essential value. The same may be said of a modern bumper disc harrow and other implements.

The Indian farmer who has sufficient land on which he can economically employ the several specialist implements of Western farming, require in the present state of evolution of his workman and himself strong and simple and cheap (because they are simple), implements embodying the essential tillage features of their types, but devoid of anything which increases delicacy and cost, even though in the hands of an expert such may increase efficiency in actual handing.

I do not think that the majority of British and American agricultural implement manufactures have really studied the needs of the East.

Further the great mass of Indian farmers are small holders, who, even if they were provided with cheap capital, have not the opportunity for the economic employment of several specialist implements on their holdings In their case the only suggestions I can offer are—

(*i*) Concentration on Indian implements so as to add to their working efficiency and capacity of being altered by the owner to meet the varying demands he has for his general purpose implements.

(*ii*) The production of strong and simple implements on Western lines which are capable of being altered by changes of attachment to plough, cultivate, harrow and hoe, on the Planet Junior principle, but stronger and if possible simpler.

At present we attempt to hasten the adoption of improved implements by active demonstration in the villages and giving *taccavi* loans. Reference to the memorandum will show that the rate of progress has been considerable in recent years I can only suggest an increase in staff to forward the first line and an expansion of *taccavi* to permit of the necessary purchases.

QUESTION 16—ANIMAL HUSBANDRY – (*a*) (1) My opinions are given in the scheme for the improvement of cattle-breeding and livestock in this Province, which has been placed before the Commission. *

The chief defects from which Government stock-breeding has suffered in the past are—

(1) Small scale enterprises on for the most part, unsuitable areas.

(2) Lack of definite policy in existing herd-breeding and continuity of control.

(3) Lack of appreciation of the exact character of the stock which local economic needs demanded.

(4) Attempts to maintain local breeds or improve on local breeds of no outstanding merit.

The policy I advocate is—

(1) Large scale pure breeding at five good centres, using the existing areas attached to seed and demonstration farms as young stock-raising centres and thus potentially increasing the main breeding farms' capacity.

(2) The utilisation of pure bulls of the selected breeds to grade up local stock, taking up extensive tracts of forest land for these herds. For the first three to four generations, the output of these would be bullocks, but eventually they would provide high grade bulls up to a sufficient breeding purity. By a combination of the above, it would then be possible to provide good bulls by hundreds instead of tens as at present, and it would be possible to replace existing scrubs village by village over considerable areas, raising the whole standard of a district.

---

* *Vide* Appendix, pages 211—219.

At present Government herds produce about 40 or 45 reliable bulls per annum. There is no difficulty of disposal, specially under the premium system, but these are scattered over a very wide area and their obvious influence in general improvement is small.

(ii) The betterment of the milk industry in particular near bigger cities rests entirely on the betterment of the milking stock. This is included in the breeding policy referred to The great majority of the cows kept by city milk vendors are uneconomic producers. These stock owners only make their business pay them by feeding their herds by trespass, by keeping them under wretched conditions and by adulteration of the milk. It may be noted however that adulteration is also the only way of making an entirely inadequate milk-supply go round and that the amount of water added bears a fairly close relation to the quality which the buyer requires and is willing to pay for.

The removal of the milk business from the centres of the cities to the suburbs would improve the conditions of milking. This can best be got by stricter penalties on illegitimate grazing. But it would not increase the supply, though, by cheapening the cost of production, it might slightly reduce adulteration.

Co-operative enterprise, in which in the earlier stages Government co-operation is essential, would certainly improve matters.

The Telinkheri dairy is an example in this respect A considerable amount of nursing and pressure was required in the earlier days to educate the *gowlis*. The society is now flourishing, the chief contributing factors being the possession of better yielding stock and cheap wholesale purchase of supplies.

(*b*) (i) The overstocking of common pastures is greatest where grazing is commonest, in particular in Chhattisgarh. Here there are vast herds of entirely useless and uneconomic cattle, which because of this and in spite of their numbers fail to supply even the working needs of the village. The evil is the outcome of absence of restriction on the number of head a villager may turn loose and the tendency to measure social position by the number owned rather than their quality. The real reason for the maintenance of their apparently useless stock is their production of dung to be utilised as fuel.

The area is distinctly backward and it is difficult to imagine the control of grazing on the village areas and the limitation of stock as the outcome of the village panchayat or co-operation. Nothing short of State action limiting the head to be kept on the village common and regulating the number to the acreage farmed is likely to stop the evil.

(ii) There has been steady reduction of the area under grass which used to lie between fields, specially in the cotton tract. This has reduced grazing considerably. The reduction of the area of this fallow land could be neutralised by an increase under *juari*. Though the total area under *juari* in the cotton tract is greater now than, say, 40 years ago, the percentage of total cropped land under this crop is less, in spite of the larger number of plough-cattle than of old required to cope with the extended cultivation of the present day.

This position has undoubtedly been partly met by a limitation of livestock numbers to actual needs and possibly by an increased use of the Melghat forest grazing areas.

The high price of cotton has stimulated the use of the land made available by encroachment on these head-lands for the extension of this crop. With its fall will come a fall in cotton areas, an increase in *juari* and hence a balancing of the grass shortage by ampler crop residues.

(iii) There would be ample fodder of this kind were there fewer useless animals. The chief trouble does not lie in the quantity of fodder, but in its uneconomic use by valueless cattle.

(iv) It is unlikely that this can be remedied on any wide scale. Their growth demands irrigation facilities and these are only likely to be limited. The extension of ensilage, using grasses in certain tracts and *juari* fodder in others would be a more likely solution. We have still to prove however that the growth of an area of *juari* on a holding and its harvest and conversion to ensilage is as economic a use of the land as the growth of *juari* for grain and the feeding of the livestock on the *karbi*.

MR. R. G. ALLAN.

Succulence is more essential in a dairy industry than in the feeding of work stock, specially the work stock of India with their relatively high digestive capacity.

(*d*) The forests of the Central Provinces can supply a very large amount of cut grass as witnessed by the amounts baled and exported during the War without any effect on the local demands. It is not a question of absence of such stocks but the fact that, as many areas lie at long distances from these forest areas, the cost of transport becomes heavy and could only be profitably paid under exceptional conditions of shortage or if livestock became more valuable.

(*e*) Among the really keen agricultural landowners there is an increasing interest in stock improvement. The difficulty of extending this interest lies in the fact that a large percentage of the bigger landowning class take no interest in agriculture of any kind, let alone stock-breeding.

It is only of recent years that the rise in the value of work stock has drawn the attention of landowners to the necessity of protecting their agricultural interest by raising their own stock or to the possibilities of an income from the production and sale of good bullocks.

Question 18.—Agricultural Labour.—(*a*) and (*b*) The provincial memorandum in paragraphs 25 to 31 deals with the position in this Province (*See* pages 3 to 5 above except paragraphs 29 and 30 which are not reprinted.) The rice and plateau tracts have a surplus labour population. In other tracts it is short specially in the cotton tract.

There is however a fairly free seasonal migration, attracted by the better wages offering from the rice and plateau areas to the others I do not think any special measures are needed to attract this labour. As time passes and the disastrous effect of the influenza epidemic wanes, matters will improve.

A factor tending to the shortage of labour in the cotton tract is the tendency of comparatively small holders to utilise the wealth accruing from cotton in doing less physical work on their holdings and employing outside labour, thus increasing the demand on a limited supply. The fall in the price of cotton will, I feel certain, result in an increase of available labour and a fall in wages.

(*c*) I do not consider that this question applies to this Province. There is little really surplus labour population The plateau population in spite of possessing fairly large areas of culturable land and in spite of the opening up of railway communication, has not materially increased.

Question 23.- General Education.—(*c*) (i) In my opinion, advance in agriculture in this country depends on the education of the bigger landowners to a sense of their responsibilities as landlords. There are many who have a keen interest in agriculture, but there are on the other hand very many who have little personal interest, in the industry and little or no appreciation of the duties which their position in the State demands. They derive an income from the land, but unlike the tenant and the State supply nothing towards its development. In many cases the evil is even greater; their interest in the ownership of land rests simply in the advantage which their position as landlords gives them for conducting a lending business.

The possession of landlord rights in land even such as the malguzari system permits is historically recent. The personal interest in his land and in his tenants, the love of an ancient heritage which characterises the better class of landlord in England is the outcome of generations of possession. It is thus not surprising that we do not find this interest abundant in India and that the spirit of the tax collector still influences the malguzar landlord of to-day.

I regard University education and higher education at the Agricultural College as the principal means by which this end can be attained. I supported the affiliation of the College with the Nagpur University chiefly because I hoped that its ability under the University to give a degree with the status this carries would alienate the sons of such men from arts and law and attract them to a form of advanced study in keeping with their position in the State.

An Agricultural College under a University should cater for the needs of three groups:—

(1) The bigger land-owners' sons, the future leaders of rural life, or men desiring to be trained as estate managers.

(2) Students seeking to secure a more scientific knowledge of agriculture with the intention of future investigation, teaching or employment in some line of service—Government or otherwise—in which such knowledge will aid them.

(3) The sons of bigger farmers or would-be farm managers whose need is a better practical and business knowledge of modern farming and modern means to its achievement.

The first two should be met by the University Degree Courses. The last by two-year courses recognised by the University and conducted either at the college itself or at external centres, but under the general college control, being staffed by men who had experience, gained at the college and in practical farming. As far as the existing college is able, it attempts to cater for the needs of all these groups. The first two under the classes conducted for its Degree Course and the last by means of its two-year Certificate Course.

One realises, however, that the interests of the first two groups are not identical. Both need a groundwork of agricultural technique and a knowledge of sound farming practice and the reasons which govern this, but the first group requires less devotion of time to the direct sciences and greater concentration on land and estate management, agricultural economics in its various phases and in law as related to land than the uniform course now given and the existing staff permits of.

At present as affiliation is but recent, the majority of students are of the second group.

It cannot be said that the two-year Certificate class has attracted as many of the more substantial farming class, as was expected.

(*b*) I am of the opinion that—

(1) Rural primary and middle school education should give greater attention to the training of hand and eye, utilising rural industries and rural life as material.

(2) That all rural middle schools should have their school plots of one to two acres in area and that these should be used to stimulate the boy's interest in agriculture and his personal interest on what goes on on his father's land. I do not favour the inclusion of agriculture in the school curriculum as a class room or examination subject. I would prefer it to be optional or as a recreation stimulated by small prizes, utilisation of plot product or nominal pay for effort given in the school plot. It should be a kind of class to which admittance should be regarded as a privilege and honour.

(3) The more the literary education given can be made to possess an association with rural life without detracting from its educational value, the better. Arithmetic, for instance, might easily be made to suit country needs.
The direct measurement of land—survey—might be utilised with geometry. Simple farm accounts might be included in arithmetic lessons in the middle schools.

Physical geography could be illustrated by what is to be found in progress in any field in the rains and the effects of control and direction illustrated and applied to land management

QUESTION 24.—ATTRACTING CAPITAL.—(*a*) It is difficult to suggest steps to induce men with capital to take up farming.

The chief factors which prevent their doing so are—

(1) Unreliability of returns, unless protected by irrigation.

(2) The difficulty of securing suitable single economic areas.

(3) Lack of agricultural knowledge.

Many invest in land, but very much fewer do so with the intention of farming though, I think, there is more tendency this way than there used to be.

MR. R. G. ALLAN.

I would suggest the shortening of the period of service, required in order to earn a pension of men in the Agricultural Service. I think many of these would tend to put their savings into farming, if allowed to retire with an adequate pension, before they were too old. They have the experience which many with capital lack. Such men would prove invaluable on the areas on which they settled.

It might be possible also to afford the sons of men with capital invested in land who intend farming after completing their college courses short time appointments under Government, so as to acquire that detail and business knowledge of farming which only daily experience can provide. These appointments would be on suitable Government farms.

(*b*) (1) Lack of any real interest in the improvement of their estates.

(2) Lack of ability to secure capital at reasonable rates of interest.

(3) Many improvements on an estate or village demand complete rights so as to be effective. Under existing conditions of fragmented holdings and tenant rights any large scale scheme of improvement by the landlord is rendered difficult or indeed impossible, on account of the objections raised and the difficulty of getting various interests to co-operate.

(4) Lack of sufficient knowledge of land development and hence of the best means o carrying out an improvement economically.

APPENDIX.

Note by Mr. R. G. Allan on future cattle-breeding development in the Central Provinces and Berar (*vide* Question 16.)

Types of work.—Breeding may be divided into three distinct types, all of which play their part in the present and future improvement of the livestock of a Province. All must be included to a greater or lesser extent in any policy of cattle improvement.

These types may be classed as—

(*a*) The improvement of existing more or less established pure breeds.

(*b*) The production of new breeds by hybridisation of two recognised types, each possessing particular characters of merit which it is desired to blend into one breed. In this type after the first cross is completed, subsequent mating is made between first generation and subsequent generation cross-breds.

(*c*) *Grade breeding.*—In this form a bull of an established pure breed is utilised on cows of non-descript parentage, scrub, local or country cows. Their only essentials are uniformity of size, healthiness and fecundity. The product of the first cross is known as the 1st grade. The cows of the first grade are in their turn served by another bull of the same pure breed as was originally used. This is repeated with each generation and within 3—4 generations all the stock—male and female—will become exactly of the appearance and character of the breed of the original bull used. This last type of breeding is frankly commercial. The object is to make good work bullocks or higher milk yielding cows. Which of these predominates will depend on the character of the pure breed of the sires selected. It must be noted as an essential that in both (*b*) and (*c*) the males of the first three generations and even longer in the case of (*b*) are not suited for issue as breeding bulls and must be subject to castration Type (*c*) is, however, a rapid method of getting good bullocks or milch cows and eventually good bulls. It is also easier to manage and cheaper.

The existing position in the Central Provinces and Berar.—At present the department have—

(1) A breeding farm at Garhi which handles the Gaolao breed, the one and only really distinctive breed in the Central Provinces and Berar which possesses any pretensions to what a modern breeder might define as purity.

(2) A breeding farm at Powarkhera which deals with a pure breed—the Malvi—imported from Central India.

(3) Three collections of animals, each on a small scale, at Drug, Bilaspur and Chandkhuri. They are based on Chhattisgarhi stock but there has also been some admixture of Malvi blood. Policy has been somewhat variable and in consequence progress towards the true needs, conditions and environment demands of the tract has not been marked.

(4) A breeding farm at Telinkheri which specialises in Sahiwals. This breed originates in the Punjab. It is pure. The cows are among the best milkers in India but the males are slow moving, heavy and somewhat sluggish animals.

(5) A small breeding centre at Sindewahi. The policy in the past has been somewhat indefinite: but it may be stated to be a herd of somewhat impure Umardha extraction sired by a Montgomery bull. The policy has not been fixed but it may be classed as belonging to the third type (*c*), the recent intention being to sire each generation of grades by a Montgomery bull, thus building up a herd of Montgomery characteristics.

(6) A breeding farm at Bograon. This was originally started with the intention of breeding the Khamgaon breed. The Khamgaon animals though they may possess certain general features which distinguish them from, for instance, what are called the Umardha breed, are not a pure type in the sense as applied to the Gaolao, Malvi or Sahiwal. Several attempts were made to secure a pure bull of the type but these failed. It was at last decided for lack of another type to breed the cows to a Montgomery. The intention was like No. 5 to create a grade herd of Montgomery.

(7) A small breeding herd at Khandwa. The foundation cows are Nimari or possibly more exactly Nimari-Khergaon, as most of the stock in this tract has been tainted with the Khergaon blood, an emigrant from Indore. These cows are also sired by a Montgomery. The general intention is, what I have termed, grading and as in 5 and 6 the ultimate product would be a Montgomery grade.

(8) At Adhartal a small experimental herd, the product of a cross between the Malvi and the Montgomery. In this case we have something different from (5), (6) and (7) as we are here dealing with the first cross of two definite breeds, each possessed of some purity and definite character, and not with a bull of a pure breed on collections of semi-nondescript cows of impure blood, as are represented by the Umardha-Khamgaon and Nimari cows at Sindewahi, Borgaon and Khandwa. This small herd is experimental. It is an example of "New Breed" construction and the future bull will be a Malvi Montgomery cross and not another pure Montgomery. It may be possible to combine the solid heavy work character of the Malvi with the milk producing character of Montgomery female in the same breed.

(9) At the College farm, Nagpur, a small experimental herd in which breed making is in progress, mere half-bred Ayrshire-Hansi cows are being bred to a Montgomery bull. In this case strong milk characters exist on both sides and the object in view, while keeping the above, is to combine the quick movement of the cross with the climatic and disease-resisting character of the Montgomery, thus producing a breed of which the males will be quick moving animals, suited to the Indian climate and the females milkers of value.

In this case as in No. 8 the sires to cover the females of the first generation of Montgomery-Ayrshire-Hansi will be from the males of the above combined strain

We have thus breeding of type (*a*), *i.e.*, establishment of herds of existing Indian breeds of merit in cases 1, 2, 4, at Garhi, Powarkhera and Telinkheri, dealing with the Gaolao, Malvi and Sahiwal breeds. Breeding of type (*b*), the making of new breeds, in cases 8 and 9 at Adhartal and Nagpur and work on the lines of type (*c*)—Grade Breeding—in 5 6 and 7.

The type in No. 3 has been less defined.

In reference to the breeding farms referred to above the Deputy Director to Agriculture in charge of Animal Husbandry is of the opinion, with which I concur, that the three breeding farms under No. 3 at Chandkhuri, Drug and Bilaspur and those at Sindewahi, Borgaon and Khandwa are unsuited for breeding purposes, as regards size, environment and natural food supplies. We do not suggest that these should be done away with, but that they should act as depôts carrying young stock over a certain age till they are ready for sale sent thence from central breeding farms. It will be no more costly than at present, indeed in some respects cheaper and will certainly add to the efficiency of the work and the number of marketable stock available. The relation of these depôts to the central breeding centres is shown later in this note

Breeding objects — In any rational animal breeding policy it is essential that the objects to be sought should be clearly defined The object of any breeding is not merely an animal or even a good animal but an animal possessing certain definite characters and able to transmit these characters to its offspring. The power of transmission is dependent on the purity of the bull and increases with each generation of effective breeding. The characters of importance are (1) those which make the animals produced suited to the environment, climate and food supplies of the area in which they live and (2) those which tend to endow them with the form and functions which render them of local commercial value. The climate and environment of different tracts are frequently distinctive. The commercial demands of one locality differ widely from those of another.

Environment and food supplies primarily decide size and ability. A big breed would not thrive under the normal conditions of Chhattisgarhi life. A heavy slow moving type would fail in a hilly tract. A big type is adapted to the plains and an adequate food supply. No breeding policy which overlooked the chief essentials of environment could hope to be lasting in its effects.

This is not however all. Assuming this pitfall to be avoided, the commercial utility of the animal, the want of the buyer and the object for which he keeps his animals and the type of production which he expects of them, must be adequately met by the

breeder, if the pure breed or the new breed, he desires to introduce, is to prove effective or popular. One centre asks for quick moving bullocks, another desires power and vitality rather than speed and a third seeks to make its money by milk and has thus only a secondary interest in the males of the breed.

It may be possible to provide a dual purpose breed, one in which we find a work characteristic of the desired type in the male and milk in the female.

The fact however that the female gives milk while the bullock is slow and heavy would not satisfy the rural farmer whose money depended on the speed with which his work at certain seasons could be done. A dual purpose must not merely provide milk and work, but it must be the right type of work.

To the dweller far from the city the utility of the bullock for his work is a much more important feature than the milk capacity of the cow, however valuable this last asset may be.

The value of seeking improvement from outside.—Because a certain breed or animal or collection of animals of roughly similar type is found in a certain area, it does not imply that they are for that reason the best or the most commercially valuable type for that particular tract, though they may provide evidence as to what the climate will allow or the direction to which the commercial needs of their particular locality tends.

The improvement of local stock of low purity value from within itself is a very slow process.

The cattle population of the United States, the Argentine or Australia would not be what they are today had their stock breeders attempted to work up the local breed without resource to other countries for pure stock of known value.

Much more rapid and effective results are usually obtained by the introduction of a breed which suits the environment and fulfil local commercial needs, but which is brought in from another area where purity has been arrived at by more careful attention to the art of breeding and by using bulls of this breed to grade up the local type to the higher standard of the introduced breed.

This is I consider the quickest method of improving the majority of the Central Provinces and Berar stock. The cattle population of the Province like the human is largely emigrant in origin. Very little except the Gaolao breed has any pretensions to purity of extraction

Specified needs in cattle.—Rural Berar and Western Circle –

(1) activity and rapidity of action.

(2) increase of size and weight to meet the general tendency to deeper primary cultivation.

(3) milk in the female as making her worth better care and increasing her ability to nourish her calf.

Rural North Central Provinces—

(1) capacity for heavy and deeper cultivation. Strength and ability to pull more essential than speed.

(2) milk if procurable.

Rural Southern Circle, Nagpur Division, and parts of plateau :—

(1) quick movement with some increase in body weight.

(2) milk if procurable.

Chhattisgarh.—A small hardy, well muscled male suited to the condition of the particular climate and food supplies.

Urban and semi Urban areas in any of above—

(1) higher milking cows.

(2) working males, type not so important but tending if possible to the particular rural needs in its own tract, as providing a better selling animal.

Specified needs in breeding centres.— These may be classed as threefold—

(1) They must be sufficient in area to provide for herds of large enough numbers so as to yield a corp of bulls per annum which will admit of distinguishable improvement on the stock of the locality.

(2) The conditions as represented by climate, water facilities and grass of fodder supplies should be the best procurable, so as to admit of full development and to secure the full advantages of the actual processes of correct mating and selection.

(3) The production of the stock should not entail unnecessary overhead charges, the common defect of small undertakings.

The existing conditions in relation to these needs.—(*a*) *Cattle.*—It may be stated that no attention has been given to the essential needs of Berar in the past breeding policy. The only herds we find in any way associated with this circle are Borgaon and Khandwa. In both we find the same type of breeding, *i.e.*, grade breeding to a Montgomery bull. The Montgomery answers the third need as expressed for this circle they also possibly add to the factor of weight in its application to heavier draft but the males of this breed and the eventual character of the grade males of these herds are the absolute opposite to the general needs of rural Berar.

The Montgomery in short is not the correct type of pure breed for the establishment of grade herds in this particular tract. There has been a tendency to place milking ability at too high a value. The average typical Montgomery bullock in Berar would be only a shade more valuable than a male buffalo. For Berar purpose, the Montgomery does not and is not likely to provide a dual purpose animal when dual implies speed with power in the male and milk in the female.

There is in my opinion only one breed in India which would provide rapidly for the three stated needs in Berar cattle and that is the Hansi-Hissar of the Punjab Such as I have seen of its action on local cows is evidence in favour of the grading it effects in creating a distinct improvement in the work capacity of the progeny. Possibly eventually a breed built from the foundations in use in the College experimental herd may provide another desirable dual type for this tract

In the north of the Central Provinces the Malvi breed, now of some years standing at Powarkhera, supplies bulls which meet the main need of this tract, *i.e.*, powerful but slower draft ability.

The Montgomery male by itself would not be effective.

The experimental attempt at a new breed at Adhartal by crossing the Malvi and Montgomery may however in time provide the breeder's ideal for that area, *i.e.*, a dual purpose combination of efficient heavy draft and milk.

In the Southern Circle the Gaolao breed at least for the working requirements of that tract. Here as in Berar the dual purpose type as aimed at in the College experimental herd, would find a suitable market, if established.

In Chhattisgarh, the problem is difficult. There is no use attempting to build a big breed by grading Chhattisgarhi cows with either a Malvi or a Montgomery.

The climate and food supplies are all against such a breed surviving. It is not possible to lay hands on an outside pure breed of merit which without being too big would raise the standard of the local bullock. The only resource is to work with Chhattisgarhi materials, a slow and difficult process. The problem of feeding plays just as big a part as the problem of breeding in this tract.

For the Urban areas the Montgomery is indisputably the best breed to push. It may be mistaken to do so in rural areas of the Central Provinces and Berar but it is not so when milk becomes the chief source of profit This herd is being developed at Telinkheri and already bulls of this breed are being kept for the service of the cows near city centres. Buffalo improvement is also desirable in relation to both milk and *ghi* supplies.

This survey of cattle needs and the steps taken by the department in the way of pure breeding and new breeding show that the steps taken have not been at fault except possibly in reference to the utilisation of the Montgomery to grade up the herds at Sindewahi, Borgaon and Khandwa, where the value of milk has perhaps tended to overshadow the consideration of working efficiency.

(6) *Breeding centres* : —

The chief defects of the present farms are that—

(i) There are too many centres where actual calf production is being done, in comparison with the existing scope of the work and the output of stock.

(ii) In several cases they do not provide the fodder and environmental conditions essentially linked with breeding, if effective progress is to be expected.

(iii) The whole breeding and cattle improvement problem of the provinces is being tackled on much too small a scale. If progress is to be made

whether in providing better bulls for village service or in increasing the number of effective work stock to meet the greater demands of improving tillage standards, or an increase of the milk supply for the betterment of the physique of the next generation, the present pinprick method of playing with the subject must give way to something which can show effective results within the next twenty years, and not within the next century.

(iv) Both the Central Provinces and Berar have extensive areas of forest land well grassed and watered, the former in its jungles of Mandla, Jubbulpore and Saugor and the latter in the Melghat which are not being utilised to their best purpose in regard to the development of agriculture and from which a better return could be derived by the State, if portions were to be utilised in an intensive cattle raising policy. The cost of such development in these sparsely populated areas would be small when measured in results.

The proposed policy.—This may be outlined as follows :—

1. The establishment of pure bred herds (class (*a*) of the first paragraph of this note) at—

(*a*) Ellichpur using a milk strain of Hansi-Hissar.
(*b*) Garhi the Gaolao breed.
(*c*) Telinkheri the Sahiwal breed.
(*d*) Saugor the Malvi breed.
(*e*) Pendra the Chhattisgarhi.

(*a*) This area should be definitely secured in 1927. The position is discussed in another item of the agenda.

(*b*) and (*c*) exist already.

(*d*) implies the securing of forest land in this district which is understood to be easily possible. It is designed to replace Powarkhera and to allow of an extension of this breed. The output at Powarkhera is at present much too small. There is no change in breed

(*e*) like (*f*) implies the securing of land in this area, which I am assured is easy. It is very much better placed than any of the three small farms in this Division as a cattle-breeding centre. The change costs practically nothing.

2. The conversion of the following small cattle farms to young stock depots thus adding to the size and productive ability of the central farms under :—

(*a*) Drug, Bilaspur and Chandkhuri in the Eastern Circle.
(*b*) Sindewahi in the Southern Circle.
(*c*) Borgoan and Khandwa in Western Circle.
(*d*) Powarkhera in the Northern Circle.

(*a*) would be an extension of Pendra (1b)
(*b*) would act as an extension of Garhi (1b)
(*c*) would provide extensions to Ellichpur (1a)

(*d*) The existing pure bred herd here would go to the larger proposed area in Saugor (1d) and the existing farm would depot the young stock thus increasing the potential value of Saugor.

The running costs and overhead charges of all the above would be reduced and the actual productive capacity increased.

3. The opening out of forest areas (*a*) in the Melghat for Berar and (*b*) in Mandla for the north of the Central Provinces.

The ideal in each area is the utilisation of about 10,000 acres in each tract in block farms of 2,000—2,500 acres each—

(*a*) would consist of local Berar cows and would be sired from Ellichpur,

(*b*) of local cows of the North Central Provinces and would be sired by pure Malvi bulls from the central herd in Saugor district. In the first instance the males produced by both these grade herds [*vide* first paragraph of note, class (*c*)] would go on the market as bullocks for which there is a big demand and later, as purity was attained, they would provide large numbers of high grade breeding bulls.

The Bor forest scheme (*vide* page 218) represents a definite example of a farm of this type. I estimate that 3 to 4 of these are required in each of the above tracts though they need not be created in one year.

4. Under the class of new breeds [1st paragraph type (*b*)]—

(*a*) A small experimental herd at Adhartal dealing with steps to combine the qualities of the Malvi and Sahiwal.

(*b*) The experimental herd at the College farm working on a dual purpose breed for the needs of the south of the Province and Berar. Both the above already exist.

5. In association with (1c), *i.e.*, the milking breed of Sahiwal at Telinkheri in that, as at Telinkheri, the breeding would be for the provincial needs of all urban and semi-urban areas in the Central Provinces and Berar, the establishment of a buffalo breeding herd in Saugor. In this case breeding of type (*c*), paragraph 1, would be used and local she-buffaloes would be sired by pure Delhi males brought in from outside the Central Provinces.

The area would for convenience of control be situated in proximity to that selected for the pure Malvi herd (1d)

Features of the scheme.—This scheme if accepted would give—

(1) Each main tract one effective pure breed central farm supported by one or more young pure stock raising depots.

(2) It would provide Berar and the Central Provinces each with grade breeding farms on a large scale thus utilising the forest for agricultural purposes.

(3) It would provide for the early improvement of the milk supply, both cow and buffalo, of our urban areas.

It is impossible to lay too much stress on the need of expansion of our cattle-breeding policy. There has been nothing done in the Punjab in the past of greater value to the present stock characters of the cattle of that Province than the policy which years ago decided on the utilisation of the thousands of the then sparsely populated areas which constitute the Hansi-Hissar farms of today and which make possible the steady improvement of the village livestock district by district now in progress in that Province.

At the present day with square miles of country at our possible disposal we find the Western Circle and the Northern Circle buying their work stock from outside the Province. In the north in particular the Central Provinces is putting money into the pockets of the Central India breeders who possess almost a monopoly of supply and charge accordingly, while its own areas go unused.

The cost.—This is outlined in the paper attached to this note.

The capital cost in Berar has been estimated at Rs. 65,000. This is on the fair assumption that the final possession of 250 acres of Ellichpur military land with the needed buildings will cost the Province nothing.

It represents what is wanted as a minimum as regards the area to-day. But I do not think we should stop there. I regard it as essential that there should be at least two more areas of the type of the Bor forest and that as a Board we should make it clear to Government that the interests of agricultural development in this area demands this. I may point out that I understand that the Bor forest only brings in Rs. 500 at present per annum to the Forest Department.

These additional blocks should be earmarked for like expansion. They need not be developed for 2—3 years time but they should be clearly available whenever the time comes. Each would require about Rs 30,000 capital. The whole Berar scheme would thus demand a capital outlay of about 1½ lakhs to put in on a firm footing, to allow of provision of between 30 to 40 pure bred Hansi bulls a year and some 150 to 170 pairs of bullocks per annum in a few years time giving place under twenty years to a supply of 300 high grade breeding bulls to say nothing of a supply of cows of reasonable milking capacity.

The proposal for the Northern Circle asks for roughly half a lakh of capital now. The Saugor centre with its Powarkhera depot will in a few years time be in a position to supply, if this is accepted, 80 pure bred bulls per annum. The grade herds centre as in the Melghat, will cost about Rs. 30,000 each. As in Berar one should be taken up at once and at least two should be determined on in a year or two year's time. The total for the full scheme would be 1 lakh. The production would be as in the Melghat.

In the Southern Circle the present proposal will not imply increased capital cost, but the arrangement of a central farm and depot will double the output of first class bulls.

MR. R. G. ALLAN.

Under provincial I have placed the two sections dealing with milk production. That at Telinkheri already exists and requires no mention.

There have been frequent requests for steps to improve the buffalo and the proposals now made enable this to be begun on a fairly large scale at a comparatively moderate capital cost.

The total immediate capital cost over the whole Province is only 1¼ lakhs with an eventual addition of 1¼ lakhs for the full development of the Melghat and Mandla schemes.

The present recurring expenditure on cattle-breeding is ludicrously inadequate. I have myself seen more than this total for the Province for a year spent on a single bull bought by the Argentine Republic.

The proposed scheme, in as far as it is stated on the attached estimate and without reference to the further extension in the Melghat and Mandla, calls for double the present annual expenditure. At present we can supply perhaps 40 to 50 bulls a year, and a number of these as from Sindewahi, Borgaon and Khandwa can scarcely be said to be satisfactory breeding bulls. The present scheme to the extent allowed in the estimate would permit the supply in four to five years time when developed, of four times the number of reliable bulls of different breeds and an outturn of as many as 180 to 200 bullocks per annum. Each year as it passed would see the standard of these bullocks improve to that of particular pure bred sires type and I maintain that in fifteen to twenty years these bullocks could issue as breeding bulls. In the event of the full development in these forest areas the total bullocks would be about 600 per annum in the immediate future and eventually there would be a potential source of high grade bulls to, say, the extent of 500 per annum apart from those provided by the pure bred herd farms and their associated depot.

By the present breeding arrangements, it will take 150 years to improve effectively the cattle population of the Province. By the adoption of the proposals, the same results can be secured in 25 to 30 years

Rough Estimate of Cost of New Cattle-Breeding Scheme.

I.—BERAR—WESTERN CIRCLE.

A.—Ellichpur Farm.

Non-recurring Expenditure.	Rs.	*Recurring Expenditure.*	Rs.
Purchase of 30 Hissar cows and bulls.	8,000	Pay of menials ...	(*a*) 5,000
Fencing for 250 acres ...	8,000	Feed and care ...	8,000
Repairing, building and erecting Superintendent's quarters.	5,000	Building and fencing ...	1,000
Purchase of tractor, bullock and implements.	8,000	Purchase of stock ...	500
Purchase of motor lorry ...	4,000	Miscellaneous ...	1,500
Total ...	33,000	Total ...	16,000

(*a*) 10 ploughmen @ Rs. 15 each, 4 milkers @ Rs. 15 each, 3 *chowkidars* @ Rs. 14 each, 3 coolies @ Rs. 8 each, 1 tractor man @ Rs. 50 and variable labour Rs. 900.

B.—Graded herd in Bor Forest (per 2,500 acres).

Non-recurring Expenditure.	Rs.	*Recurring Expenditure.*	Rs.
200 cows @Rs. 50 each ...	10,000	Pay of menials ...	3,000
3 Hissar bulls@Rs. 500 each ...	1,500	Teed and care ...	10,000
Cost of bullock and implements	4,000	Buildings and fencing .	250
Cattle sheds and godowns ...	8,000	Miscellaneous ...	750
Quarters for Superintendent and staff	6,000		
Miscellaneous water-supply, etc.,	2,500		
Total ...	32,000	Total ...	14,000

C.—Cost of two depots at Borgaon and Khandwa ... 5,000

Western Circle Total ... 65,000 Western Circle Total ... 35,000

II.—NORTHERN CIRCLE.

A.—New Malvi breeding centre in Saugor (1,500 acres).

Non-recurring Expenditure.	Rs.	*Recurring Expenditure.*	Rs.
Cattle sheds and wells ...	15,000	Pay of menials ...	2,000
Quarters for Superintendent and staff.	5,000	Feed and care ..	8,000
		One depot at Powarkhera ...	2,000
		One experimental herd at Jubbulpore.	3,000
Total ...	20,000	Total ..	15,000

B.—Graded Malvi herd in Mandla 14,000

	Rs.		
Costs as in I-B ..	32,000		
Northern Circle Total ...	52,000	Northern Circle Total ...	29,000

III.—SOUTHERN CIRCLE.

	Rs.
By increase of existing Gaolao herd at Garhi ...	13,000
Cost of depot at Sindewahi ...	3,000
Total ..	16,000

IV.—EASTERN CIRCLE.

	Rs.
By amalgamation of three existing herds into one (site to be selected 1,200 acres)	10,000
Cost of two depots at Rs. 2,500 each ...	5,000
Total ...	15,000

V.—PROVINCIAL.

(Maintenance and breeding of dairy cattle.)

A.—Maintenance of Telinkheri dairy farm as at present ... Rs. 25,000

B.—By improvement of buffaloes (farm of 3,000 acres to be situated in Saugor).

Non-recurring Expenditure.

	Rs.
Cost of breeding stock	7,000
Cattle sheds	5,000
Quarters for staff	3,000
Wells, etc.	2,000
Total	17,000

Recurring Expenditure.

	Rs.
Pay of menials	1,500
Feed and care	5,000
Miscellaneous	500
Total	7,000

Summary of Expenditure.

		New Scheme		Present Expenditure Recurring.
		Non-recurring.	Recurring	
		Rs.	Rs.	Rs.
I.	Western Circle ...	65,000	35,000	9,000
II.	Northern Circle ...	52,000	29,000	6,000
III.	Southern Circle ...	...	16,000	11,500
IV.	Eastern Circle ...	...	15,000	10,000
V.	Provincial ..	17,000	32,000	25,000
	Total ...	1,34,000	1,27,000	61,500

Oral Evidence.

29620. *The Chairman*: Mr. Allan, you are Principal of the Agricultural College at Nagpur?—Yes.

29621. You have provided the Commission with a note of the evidence which you wish to give. Would you like to amplify that by any statement at this stage?—No, I do not think so.

29622. Would you give the Commission a brief account of your own training and past appointments?—I got my honours training in science at Cambridge; after that, for three years I was schoolmastering in a science college in Yorkshire. Subsequent to that, I went back to Cambridge for about two years and took my Licenciate Degree in Agriculture I then worked for some time on one or two farms, and after that I got an appointment here. I have been Principal of the Nagpur Agricultural College since 1907.

29623. I might ask you at this stage whether you can account for the great interest that you have taken in the cattle-breeding problem?—I have several friends and relations closely associated with cattle-breeding one way or the other; in my early days I was closely associated with them. I have an interest in stock breeding, and I have worked on it at the college dairy farm.

29624. What is your staff at the College? Have you a deputy?—No. The staff of the Agricultural College consists of seven Assistants.

29625. Are the officers of the Agricultural Department engaged in research doing any teaching in the college?—Dr. Annett takes certain parts of the course in Chemistry and Mr. Mehta looks after the Botany of the college as well as his own research work in crops.

29626. Those are the only two who are doing the teaching?—Mr. Dastur, the Mycologist, takes a certain number of classes in Mycology, and the Entomologist, who is an Assistant Entomologist, takes the section in Entomology in addition to looking after his own work.

29627. So that the research officers of the department are in close collaboration with the work of the college?—Yes, very much so.

29628. Is that a satisfactory arrangement?—Distinctly; it is absolutely essential that it should be so.

29629. What does your own work mainly consist of?—My own work is to look after the teaching work of the senior students in the third and fourth years; agriculture is a good deal of it; I have also to look after a little of the agricultural work of the second year. I take bits here and bits there; I do not take the whole course right through. I take certain subjects, agricultural economics with accounts and costing and like matter; for that part of the training I have not got any one qualified except myself.

29630. Is a good deal of your time taken up by office work?—The ordinary office work takes about three hours or so.

29631. You feel you have got reasonable staff on that side?—Yes, I think so, as far as my actual office is concerned.

29632. You do not complain of the calls on your own time in that direction?—No, it is quite reasonable.

29633. Are any of your seven Assistants engaged in any research work?—No, practically none; they are practically all teaching Assistants. They have not really got time for it.

29634. Are any of them capable of research work, in your judgment?—No, not true research.

29635. If it were possible, no doubt, you would like to see them in their own time engaged in work of that sort?—Yes, the staff is very full up with work. The amount of work which the staff has got to do is almost excessive in some cases.

29636. On page 197 of your note of evidence, you make quite plain the nature of the Central Body which you wish to see set up, and you suggest measures for financing that Body. You say, "Its working funds could be secured by the levy of a small export cess, ranging from one anna to four annas per cwt.". Has it occurred to you that that would mean that export crops would be paying a cess which would be spent on non-export crops as well as on export crops?—I have proposed that it should be spent

chiefly on the staple crops, except for that section of research which may influence the whole lot.

29637. Do you think you can get much, for instance, out of rice by any export cess —No, I do not.

29638. And you call rice one of the main staples?—Yes, a fair quantity is exported, specially if we include Burma.

29639. Do you think that the constitution of the body that you suggest here would result in a greater part of the members of the body responsible for allocating funds being technical men?—Not necessarily technical, but partly technical. I should like the body to be selected really by the Government of India. I am looking forward to a body that would be permanent, and almost a Government body.

29640. Do you think there might be difficulty in getting, if I may so call it, a bold allocation of funds in essential directions by a body consisting mainly of technical men? These technical men would be interested, most of them, in one or in another Province, and it might be an advantage for them to allocate funds to a particular Province for a particular purpose?—I do not propose the allocation of funds by Provinces; they should allocate the funds to the committees or bureaus, who would be working on the lines of the Indian Central Cotton Committee.

29641. Entirely to the crop bureaus; and you do not anticipate that these crop bureaus would be working in conjunction with provincial organisations and, to some extent, assisting provincial organisations?—They would assist provincial organisations. These would have their representatives, on the bureaux, very much on the lines on which the Indian Central Cotton Committee is working at present.

29642. You say that there are two Botanists in this Province at the moment, and that the existence of the second one is the outcome of the constitution of the Indian Central Cotton Committee. Is he engaged the whole time on cotton research?—He is entirely engaged on cotton research. Mr. Youngman is entirely engaged on cotton research and Mr. Mehta is paid by the Indian Central Cotton Committee; but we were to have had two a long time back. Our original staff was to contain two Botanists and we want at least two Botanists very badly.

29643 Now, on the question of agricultural education I want to ask you to tell the Commission a little about the scheme of education at present given at Hoshangabad Is that one of the two vocational middle schools that were attempted some years ago?—Yes; we started one at Hoshangabad and the other at Chandkhuri and they did not really take on well, particularly the latter, because there was not really very much interest in it. With regard to the other, the only drawback seems to have been that the men who wanted to educate their sons were rather inclined to educate them further than this middle school allowed. I do not say that even then they will go on, but there seems to be the possibility of that. I think the present school has got a very fair chance in front of it, except that it is very expensive.

29644. What does it cost per pupil?— I am afraid I have not got the figures now.

29645. Perhaps you will get those figures for us?—I can get them for you.

29646. Would you say that it is likely that there will be a demand for that type of education in other districts of the Province?—I understand from what I hear that it is likely in the Hoshangabad neighbourhood and in the surrounding districts. I understand there is an interest created in the school and other people are thinking too of educating their sons on right lines. I do not think that the figures giving the cost per student now will be very valuable because it is just recently that we have started the school on its present lines.

29647. The teachers have been through the Agricultural College?—Yes; certainly three out of four have been through the College.

29648. You regard that as an important qualification?—It is absolutely essential; at least two men out of every school should be so trained.

29649. Now, on page 203, in answer to our Question 6 on Agricultural Indebtedness, section (*c*), you suggest: "The right to mortgage might be restricted to limitation of this right to the mortgage being effected through recognised or Government controlled land mortgage banks". Have you ever discussed that from the legislative or legal angle with any competent people?—No.

29650. That of course could not help the ordinary occupancy tenant who would still be without any right of mortgage, would he not?—Yes.

29651. Unfortunately an important part of the cultivators in this Province are all occupancy tenants, are they not?—Yes, a large percentage.

29652. I have read with great interest and I am sure my colleagues also have the note* on '*Future Cattle-Breeding Development in the Central Provinces and Berar* which embodies your own views. The difficulty at the moment, I take it, is that the money for any such comprehensive scheme is not available?—Yes; I hope there will be money. We have been contributing very heavily towards the Famine Insurance Fund in this Province and if they did not demand quite as much in annual payment to this Insurance Fund we might get on with the work.

29653. Do you attach great importance to the improvement in the breeds and in the practice of animal husbandry?—Yes; I think each man who is going to start breeding should really breed bullocks rather than breed bulls. I think it is much better that money be invested in grading up local cows with the object of producing good working bullocks.

29654. One of the difficulties of the situation at the moment appears to be to persuade the cultivator to give the cow any food. The cow appears in seasons of shortage to suffer the worst, as a result of which of course the calf suffers too?—I think that if the cow produced plenty of milk it would not be made to suffer so much, and would get a good supply of food.

29655. Probably you attach importance to an increase in the consumption of milk and milk products by the cultivators as a valuable addition to their diet?—Yes; certainly.

29656. For the vegetarian population it is almost essential that some milk products should be consumed to complete the diet?—Yes; it undoubtedly helps the diet.

29657. You point out, on page 208 of your answer to Question 23, three groups for whose needs an Agricultural College under a University should provide. I want to ask you whether you see any signs of a demand from either group (1) or group (3)?—Yes, under group (1) I have a hope that there is going to be a demand. At present in the first year I have got at least six or seven men whose holdings or land possessions run to about 1,000 acres.

29658. And their intention is to go on with the business of cultivation?—Yes that is the present intention, the intention as told me. But I am afraid that is what the students generally tell me when they first want admission. Each student starts with the intention of farming his own land; but his association with land, if analysed, will be found not infrequently to be but 20 to 25 acres. It is not worth while to study in the College for four years in order to go and cultivate a farm of 20 acres. I look for men who want to get back and cultivate or manage their estates and who have large holdings, so that if they do not want service or they do not get employment, at any rate they have got a job to go to.

29659. Is there any sign of a demand for training people as managers?—I get requests for such men. My difficulty is that all the better men are absorbed by the department and you cannot expect a young man just out from the College to look after a big estate. I give them three or four years' practical work in the College course, but that does not keep them fully in touch with farming.

29660. Do they get any training at all in the economic and commercial side of farming?—In the College course they get training. There is a regular course of agricultural economics as far as you can call anything agricultural economics.

29661. Nothing but experience is able to provide the power of management?—I agree.

29662. You may be able to pass examinations, but something more than that is necessary when you are left with a 300 acre farm on your hands?—Yes.

29663. On page 209 of your answer to Question 23, you give your views as to the services that rural and middle school education should give to the public. You think it is the case that the centre of the difficulty lies in the teacher?—Yes.

29664. Is he paid enough to attract the right type of man?—I very much doubt it.

29665. Has he been trained?—Yes; there are training schools; but I do not think they are trained in this direction of rural life or agricultural life.

---

* *See* pages 211—219.

29666. That is what I expected you to say. Do you think it is possible for a man to give, for instance, helpful nature study classes unless he be either greatly gifted in that direction or particularly trained?—I think so; he must be largely gifted.

29667. It is not a very easy thing to do, is it?—No.

29668. Have you any views about adult education?—My own view about adult education is simply the extension of demonstration work carried on by the department; that seems to me to be the only way really to educate the farmer from that point of view.

29669. That is technical education?—Yes.

29670. Have you any views about general adult education?—None, except such as can be done by the help of lantern lectures or cinema demonstrations.

29671. Have you ever thought about the future of female education in this country?—No, I have not.

29672. Women have now got the vote, have not they?—I believe so.

29673. Like the small cloud on the horizon no larger than a man's hand, that may grow, may it not?—Yes.

29674. *Sir Henry Lawrence*: Do you think the relations of the Agricultural Department with the officers of the Revenue Department are sufficiently close?—I think so in this Province, we find no difficulty in getting things done by revenue officers; the District Officer is always willing to help; of course it varies a lot: some District Officers are more active than others, but I do not think I have heard of any really great difficulty. Occasionally there is difficulty in the lower grades; but as far as the senior officers of the Revenue Service are concerned, I do not think the department has really had any difficulty in getting their assistance when it was required.

29675. Do they ever take any interest in the research work done in the College? Do they come and visit the College?—No.

29676. Has it been the practice here to give revenue officers of any grade any training at all in agricultural matters?—Yes, some years ago we had a sort of short course of about six weeks or eight weeks for young officers of the Indian Civil Service.

29677. Only the Indian Civil Service, not the Provincial Service?—Subsequently there was a sort of general course given here, partly in revenue matters, in which a few agricultural lectures were included; that did include some Provincial Service officers.

29678. Are those courses still in existence?—Yes, I suppose they are. We had one about a year ago; they do not come on regularly; they come on in spasms.

29679. It is not annual?—No, not exactly annual; it is more like every second year. Agriculture plays a part only in that a certain number of lectures on soils, crops, implements and things of that sort, are given; it is very limited.

29680. How many officers attend these lectures?—I think last time there were about 15 or 20 or something like that.

29681. How long does the course last?—About 3 weeks.

29682. Do you think it does any good in opening the minds of revenue officers to the work that the Agricultural Department is doing?—Yes, I think it does; I think it might with advantage be longer, but it certainly has that effect.

29683. But it has never stimulated any officer sufficiently to cause him to come and see what you are doing?—No, I do not think I have ever seen one walking round on his own account to see what is happening

29684. *Sir Thomas Middleton*: I think you have had longer experience in a single institution than almost any officer now engaged in education in India?—I think so, yes.

29685. What have you got to say about the general quality of the students entering the College? Have you noticed in the twenty years any marked change in the quality, *i.e.*, comparing the best that you met in 1907, with the best of the present time?—No, I do

not think I have really noticed any marked change ; we had some very good men in the early years, and then we had a period when we had rather poor quality ; latterly one of my chief reasons for getting affiliated with a University was the hope of getting hold of men of a better stamp. In the early stages the majority of men in agricultural colleges were distinctly poor, men who might have passed the third class Matriculation, but latterly we have had far more men of first and second grade Matriculation.

29686. That has been the result of affiliation ?—Yes, I think it has been stimulated by affiliation, certainly.

29687. What was the entrance standard originally when you took up your work here ; was it Matriculation standard ?—No, it was a supposed Matriculation standard ; it was really a college entrance examination standard ; men who had passed the Matriculation were accepted ; men who had not passed the Matriculation were given an examination. A certain percentage were non-matriculates. Nowadays, of course the non-matriculates are put to the two-year course of the College.

29688. What proportion of the students at present are non-matriculates ?—At present in the College I should think it is about 90 per cent who have matriculated ; the total of the certificate class in both the first and second year comes to about 16 students out of about 115 altogether.

29689. Has the question of making the Intermediate stage the entrance standard come on the horizon ?—It has come on the horizon, but not very strongly ; I am not very much in favour of it in some ways ; my general idea in agriculture is to get the student when he is comparatively young If he goes off for two years science I am rather doubtful about his coming back with any enthusiasm to the land. My practice in the agricultural course in the College has always been to have a considerable amount of agriculture in the first two years ; in the second two years I do not have quite so much field agriculture but I have rather more laboratory work. I always give them agriculture to begin with, and then on that I superimpose the more scientific part of the course. I once tried having science first and agriculture later, but that did not work , I lost all the boys who had any chance of being farmers ; they were all eliminated on the chemistry and botanical part.

29690. About what age are the students when they come to you, having passed the Matriculation ?—They ranged anywhere between about 18 and 20.

29691 Have you any views as to the teaching of agriculture in high schools so as to make agriculture a subject for Matriculation ? That has often been suggested to us ?—I am not all in favour of agriculture as a school subject. Any agriculture taught in schools at any rate up to the middle school standard, ought not to be taught as an examination subject. Once you get it taught as an examination subject it means that the teacher will simply cram up from a text-book or something of that sort, and the boys will not really know anything. We use to teach it from Fuller's Primer at one time in some of our schools, but they merely learned Fuller's Primer by heart and did not know much about it.

29692. That is to say, from the point of view of agriculture it is not desirable. Looking at it from the other point of view, the effect on education in other subjects, what have you got to say ? I am thinking of the crowding of the curriculum for the Matriculation ?—I think the curriculum is pretty well full at present.

29693. Is it not overcrowded at the present time ?—Yes, I should think so ; I do not think it can possibly carry another subject. We have in our high school courses an agricultural botany course laid down as one of the voluntary subjects, but up to date it has not been developed in any high school.

29694. On page 196 of your note you say that the work of the first description should be financed from a central source. Do you mean wholly or partially ?—Partially; I do not think Local Governments can entirely avoid part of that expense; I think it must be remembered that if the research is developed the Local Government's extension expenditure will increase, so that they meet their part of it.

29695. Had you formed any view as to what "partially" meant : what percentage should come from other sources ?—No, I cannot say I have gone into detail of that kind.

29696. But you recognise that it might be quite a variable percentage ?—Yes some Provinces are much poorer than others.

29697. The scheme for cattle-breeding has been referred to, and it has been pointed out that one of the great difficulties, perhaps the chief difficulty in cattle-breeding in

this country, is the neglect of the cow. You stated that when cows give milk they are well fed ?—That is my experience round Nagpur; when the cow is giving a good yield it is well fed.

29698. A particular cow may be lucky, it may have been properly fed from birth; it may then be picked up by a milk seller and continue to be well fed. But what happens in districts where the cows are not selected by milk sellers; is any attempt made to supplement the grazings?—There is not very much attempt; it is done here and there, but commonly I should say they depend on what they can pick up. There is some stall feeding in Berar with a certain amount of *juar kadbi*.

29699. In Berar, where there are very few grazings, the cattle could not exist without some stall feeding?—No.

29700. Your scheme aims at grazing tracts in the north of the Province?—My scheme aims at large areas of forest land which, I think, could be more satisfactorily utilised in this way; the forest is not by any means fully grazed.

29701. You aim at getting a larger and more rapidly developing sire?—Yes.

29702. The object being that it should transmit its qualities to its offspring. The general quality of the cows in these grazing tracts has been fixed by the natural conditions. What is to happen if you suddenly introduce improved sires and find yourself with more rapidly developing calves but with no improvement in the natural food supply?—Of course it is the food supply that is the great difficulty.

29703. That is the limiting factor?—Yes.

29704. So that it is of very little use starting to improve the stock until you improve the conditions under which the stock live?—That is a little pessimistic, conditions are not equally bad everywhere; they are bad possibly in the rice tract where there are far too many animals on the common grazing grounds; but in other parts they are of quite good size.

29705. We know there are such tracts; we have seen them, though not in the Central Provinces where we have only been in Chhattisgarh?—You have not seen our best.

29706. Is not any attempt now being made by propaganda or otherwise, to increase the growing of fodder crops?—No. I cannot say really that we have gone very far in the propaganda and growth of fodder crops. We have had a certain amount of ensilage experiments shown in the district.

29707. Do you see any source in these grazing areas from which a sufficien supply of fodder for the dry season could be secured?—There is plenty of grass in the forest areas which could of course be baled but up to date, though it has been tried several times, there has never been any sale for the grass.

29708. Your hope is that, if you produce bulls and introduce some more valuable strain of cattle, a demand will arise for existing supplies?—I do not think there is any lack of grass in the Province at all. During the War any amount of grass was taken away without affecting the total stock in the Province.

29709. Would it be possible to do anything with ensilage in these areas?—There is a possibility of ensiling grass like spear grass in certain parts. But I think ensilage really comes to be effective when you are dealing with a dairy industry rather than when you are dealing with work bullocks, and I doubt whether we can say that it has proved economical for a man at present to grow a crop of *juari* purely for the sake of fodder or for putting it into a silo.

29710. I was thinking of the ensiling of natural grasses, not for dairy cattle but to increase the flow of milk where you are attempting the breeding and rearing of better young cattle?—Any one who has started breeding farms in the areas could easily silo spear grass and in fact it has been done with success. Probably that is the best way of using it.

29711. *Sir Henry Lawrence*: In what month would that have to be cut?—About September.

29712. The people are then busy in their fields?—They are not then so active as they become later. September would be rather wet. It would be out of the question to do it in October as everyone is busy otherwise. That is why so much of our grass gets dry.

MR. R. G. ALLAN.

29713. Could ensilage be made in pit silos at that period in these grazing tracts?—I think so if the site were fairly nigh.

29714. *Sir Thomas Middleton*: Under General Education, you begin by saying that advance in agriculture in this country depends on the education of the bigger landowners to a sense of their responsibilities as landlords. Have you, in the period during which you have been in the Province, noticed an advance in that respect?—No, I cannot say that I have. I have got to know a large number of men who are interested in land, who are landowners but I do not think I could put down in black and white that I have seen it increased.

29715. You hope that these students to whom you have referred will in the future assist in this particular object?—Yes. There are some who simply use their villages as sources of income through moneylending and who have no real interest in the village at all. I think myself that they are not educated by experience and that is the real cause.

29716. You think that there ought to be more examples of good farming?—Yes.

29717. And that leads you to suggest that the period of service of your district staff should be shortened?—Yes.

29718. At any rate that they might be permitted to retire on proportionate pension?—Yes, retire at a time when they feel fairly active and can start on their own farming. We have got one or two such examples.

29719. If they made a success of the venture you think they would be more usefully employed from the point of view of the State than even as District Officers?—Yes.

29720. They could well be spared?—Yes, because by the time these men go through, say, twenty years' service, there would be plenty of other men coming along behind them. I am certain that it would be a distinct help if some encouragement were given. I am all for encouraging the senior staff of the department to settle down as farmers, and, once they settled down in the villages, I think myself that a great many of them would take to their own farming

29721. *Dr. Hyder*: You divide research into two parts, general and local. I would ask you to look at the scheme which you have outlined. Do you not think there would be a tendency for all research to become entirely central and for local research to disappear Since the financing would be in the hands of the Central Body, people in the Province would say Well, let us save some money here and push these schemes over to the central financing body?—I did not think of that. When I said 'general' I really referred to research on the lines of the main staples of the country. For instance, we have a good deal of orange cultivation, and I consider that a certain amount of horticultural work could be done in the improvement of that crop. I do not think that would be work for a central body of research. Oranges grow under particular soil and particular conditions and there are various sorts of oranges.

29722. Well, that point simply occurred to me when I read your note. I did not suggest here really that all research should be carried on in certain centres. I imagine that each department would have to carry on its research very much as it is doing now, but if financial and other assistance could be given than that would be all to the good.

29723. Would you like to have as you say a Minister, that is a member of the Governor-General's Council?—Yes, I meant to say a single Ministry for Agriculture.

29724. Would you rather have that money for research in agriculture than for the post of a member with his Secretariat and all the other paraphernalia attached?—I had not thought of that, I had only thought of the man, but I would certainly prefer the money rather than the Secretariat and the staff.

29725. What is the total area which you have under ground-nut? I understand that it is only about 30,000?—Yes, I think it is about that. But it is expanding, and I consider that it is going to expand on a very big scale. By next year, I think that it will be double.

29726. Would it displace millets?—It would displace cotton to begin with.

29727. Is it going to be more profitable?—Yes, it is going to be more profitable.

29728. Would it displace the inferior millets and pulses?—You would have to associate that question with the question of the pig nuisance. The inferior millets and pulses are associated with rather more jungly tracts and there you come up against the pig trouble which is the chief trouble in this Province.

29729. *Sir Henry Lawrence*: Are there fewer pigs in the cotton areas?—Yes, I think so.

29730. *Mr. Wills*: Do you think that the members of the Agricultural Service in this Province have sufficient insight into the working of the Revenue Department. In the course of their training for instance, do you think they get such acquaintance with the working of the Revenue Department as they ought to have?—No.

29731. I was thinking particularly of the granting of *taccavi* which is done almost entirely by the Revenue Department. Would it be of any assistance to them?—Yes, I think it would be of great help if there was a little more of that sort of things.

29732. To take another instance. Supposing in the course of the settlement operations, if a member of the Agricultural Service could be detailed to work for a short time in a settlement, he might be very valuable to the Settlement Officer from the point of view of his agricultural knowledge and he might also pick up a good deal of the work in connection with the land revenue system in the Province?—I agree with you.

29733. *The Raja of Parlakimedi*: You say that through lack of staff sufficient investigation into horticulture and vegetable growing is not carried out?—Yes.

29734. May I know to what extent you require it to be supplemented?—We could certainly do with a real expert in fruit-growing. We want somebody who would be able to devote his whole time to this question. I should certainly think that our orange cultivation would be very much encouraged if we could have the services of an expert who would devote his whole time to it. We devote practically no attention to vegetable cultivation or fruit-growing. Anything which is done at all is done by the Deputy Director of Agriculture who cannot, of course, give that amount of attention which is absolutely essential.

29735. What would an expert horticulturist cost per year? I do not think that he ought to cost much?—I should think that he ought to be a fairly well paid man. He ought to get about the pay of an Imperial Officer.

29736. Would you require demonstrators and also places where they could conduct their experiments?—Yes, we have got waste land, it is possible for us to develop that as there is much scope.

29737. Some demonstration work would be necessary? Yes, but that would not be a separate thing. I should think that the officer, if appointed, would be more in the nature of a research officer in a sense. He would work with the Deputy Directors of Agriculture and obtain their assistance.

29738. You say the appointment of Agricultural Engineer is only recent and that this officer has since resigned on account of the unsatisfactory conditions of his service. Has the whole thing closed down?—Not closed down; it is simply resting on its oars so to speak, we are waiting for another Engineer in other words. This Engineer left I think largely because he did not consider his conditions of pay were satisfactory. He was not on the same cadre as the rest of the agricultural officers, and, as he was not entitled to overseas pay and free passages he considered he had a grievance. He wanted to be on the same general level as the rest of the department. I personally agreed with him because I consider that an Agricultural Engineer is just as important an expert as a Chemist or a Botanist.

29739. Is any force being brought to bear on the Government to re-appoint him?—As far as I know we have not done so. He is going to be replaced but I do not know what steps have been taken in this direction.

29740. Is there a sufficient number of schools in which to train teachers of nature study?—I honestly do not think that there is any place which can train them in nature study. There are normal schools of course where they have a certain general training in nature, I suppose. In my opinion, nature study is an extraordinarily difficult subject to teach; it is a question of selecting the right type of man to do it.

29741. During your experience have you found many people who take interest in such things?—No, I cannot say I have found very many.

29742. Do people of such qualifications have any special pay or concessions given to them as an impetus?—I do not think any special pay or concessions are given to them.

29743. Are there any available at all?—I think there are one or two men who have a fair idea of things. I think there are one or two in the normal school. The student who comes from the Agricultural College has a better chance of being a good teacher than anybody from the Science College or any other college. My own opinion is that teachers of nature study in normal schools should be largely recruited from the Agricultural Colleges.

29744. Do you think enough is done in the Agricultural Colleges to create, to some extent at least, an interest in this sort of nature study?—It is not the job of the Agricultural College to train nature-study teachers.

29745. At least to open their eyes, I mean?—Yes. Teachers who are in touch with country life and with crops and grasses and weeds and so on would be able to help them to teach other people.

29746. For field demonstration work, do you think there is enough staff at present?—No, only about half the staff there ought to be.

29747. What is the present number?—About 83.

29748. Are they all properly qualified people?—Yes, they are all men who have been through the Agricultural College; some of them have taken two-year Certificate course and some the Diploma course which preceded the present Degree course.

29749. Over what area are the present men spread?—Over the whole Province. One man has roughly 500 or 600 villages or something like that. No one man, of course, can deal successfully with 500 or 600 villages.

29750. *Sir James MacKenna.*—With reference to the financing of central research, I see that, like a large number of witnesses who have made a similar recommendation, you suggest the levying of a small export cess. Now, the incidence of a cess on the crops exported would be very uneven For instance, a cess on Burma rice would come to as much as a cess on all the other exports put together. Do you not think it would be more equitable to have an acreage cess on crop area?—I have not thought out the details. I made my cess a varying figure because of the variation on the amount of export. For a large export the figure would be smaller, while the cess would be larger for a smaller and probably more valuable crop.

29751. That point occurred to me when thinking of the position in Burma. You have not thought it out?—I have not thought it out from the point of view of acreage. I thought of it as probably being paid by the man who bought it. It would be such a small sum that it could not make much difference in the price to the consumer whereas the other method would mean additional work to the revenue officer in collecting one anna or so per acre.

29752. You would not like me to take you into the further financial implications of the acreage rate?—No.

29753. Assuming either method for raising this money were adopted, either an export cess or an acreage rate, how would you like a scheme by which the collection was provincial, and a percentage of it was earmarked, by the goodwill of the Provinces, for central research, the balance being devoted to their own agricultural, veterinary and co-operative movements or would you prefer to have the whole thing pooled and administered as a central fund?—I would prefer the whole thing to be pooled and administered by the Government of India.

29754. Speaking to you as a senior officer, I would like to know your opinion with regard to the recruitment of Agricultural Engineers. I see there have been many changes in the post of Agricultural Engineer in most Provinces Do you think the difficulty is that these men have generally been recruited on special scales of pay and outside the regular cadre, and they have been enticed away by more attractive pay offered by private firms?—Yes, that has something to do with it. I know there was a feeling that they were not treated like the other officers in the department.

29755. What is your view? Do you think they should be on the cadre of the department?—I think so, most distinctly. In the early days they were recruited in a haphazard way, and some of them were more of the type of mechanics, and could hardly be on the same cadre but now I think if you want a really good Agricultural Engineer he should be on the cadre and recruited in the same way as the other officers of the department.

29756. *Prof. Gangulee*: You are a senior and experienced officer in the Central Provinces and you have been in service for twenty years. I should like to ask you what definite change or changes you have noticed in the methods of cultivation during that period?—It varies from tract to tract If you go, for instance, to the cotton tract, you will find a considerable increase in deeper cultivation work than there used to be. For example, you will find a large number of inversion ploughs in operation, and things of that kind, but in the wheat tracts one does not notice much difference in the methods of cultivation. The crop cultivation is a little deeper than it was, and in certain parts of the country ordinary broadcasting of seeds is giving way to line sowing. Those are the chief variations in cultivation

29757. These changes that you just mentioned are generally due to the activities of the department?—Yes, to a great extent they are undoubtedly due to the activities of the department. In fact, a considerable amount of demonstration and pressure has been required to secure their adoption.

29758. Am I right in thinking that your department, through its propaganda work, has been able to create confidence among the cultivators?—I think so, wherever we get in touch with them, but we are only in touch with a small number.

29759. You rightly emphasise the need for further demonstration and propaganda work, and you say here the most effective form of agricultural education in its widest sense at present is actual demonstration and propaganda work among the adult agricultural population of the Province. Do you think such a step would have a very important effect on the higher agricultural education that you are giving here?—No. What I feel is that if these people were educated to find out there was some advantage in better methods, they would be more inclined to think it worth while to get their sons educated at any of these schools which may be started on the same lines as the schools at Hoshangabad.

29760. Agricultural education might be more popular if there were more effective demonstrations?—If we increased the number of demonstrations, yes. If you compare the conditions today with the conditions prevailing twenty years ago when the Agricultural Department practically did not exist (such as it was, it was very feeble), you will find the people nowadays show greater interest in agricultural education than they used to. Nowadays we have a very much wider influence than we had, and that is largely the result of agricultural demonstration work. These two things go hand in hand.

29761. Is it your opinion that the landlords, the malguzar and the general public fully appreciate the effect of demonstration and propaganda work done by the department?—No, I do not think they appreciate it as they might.

29762. You mean as much as they ought to?—Yes. Here and there, however you find big landlords taking considerable interest in it.

29763. You are no doubt aware of the evidence given by some witnesses before the local Retrenchment Committee in 1922?—Yes.

29764. That Committee wanted to lay their axe on the demonstration and propaganda work of your department?—I remember something about that.

29765. How can you explain this trend of the evidence of the witnesses who came before the committee in 1922 if you say that the public of the Province are to a certain extent impressed with your demonstration and propaganda work?—Perhaps we have impressed the people who are working in the fields more than the kind of people who give evidence before committees. They belong to different classes. One man comes to give evidence and another man lives in his village and it is the latter man whom we touch.

29766. You have had experience of the Agricultural College before its affiliation to the University. Now that it has been affiliated to the Nagpur University, what changes do you find?—It has been affiliated for only a year and a half or two years; I cannot say that I see any enormous change, beyond that I see a greater tendency to join

the college, to begin with. There has been an increased number of applications for admittance to the College, probably two to three times more than formerly.

29767. It has therefore had a marked effect?—It has had this effect, that it has increased the number of students seeking admittance; it gives a stamp, and a University stamp is different from a diploma in agriculture, and after all it is more valuable in many directions.

29768. Who are the members of the Faculty in Agriculture?—They are heads of the sections of the Agricultural College and about three outside gentlemen, who are landowners.

29769. That constitutes the faculty?—Yes; it is a small faculty of about ten or twelve.

29770. You do not have any post-graduate training here?—No; no post-graduate training in the University.

29771. It is a two years' course?—No; it is a four-years' course.

29772. For two years you give a certificate?—Yes.

29773. And after four years you give a diploma?—No, a degree.

29774. You have stated here that you attach a good deal of importance to practical training. Before referring to that I want to ask you one or two questions on theoretical training. Take, for instance, agricultural chemistry, do you follow any particular text-book?—No, we do not follow any particular text-book.

29775. Do you follow any text-book in botany?—We have no standardised text-books anywhere in the College. The text-books which we suggest are the ones which the students may look at. In agriculture, for instance, I direct them to such books as should be read, but there is no text-book on agriculture in the College.

29776. Not even in agricultural economics?—No.

29777. Apart from the practical work that the students do on your college farm do you have any arrangement to give them working facilities on Government farms?—No. Do you mean after they finish their course?

29778. Do they have any practical work on Government farms as part of their training?—We give them about 10 to 12 hours' training a week in practical agriculture during the first two years and 6 to 7 hours' training a week in the last two years. We have no fixed period of training on a Government farm.

29779. On the question of economics, is there any method of farm costings introduced in your experimental work?—Yes, cultivation records, accounts and things of that sort are kept.

29780. Are these accounts kept by the advanced students themselves?—No; the students have not got to do anything of the kind you refer to.

29781. Do your students visit other institutions?—The second year students go round to one of our sugarcane farms, the third and fourth year students also go out on a short tour of the farms each year.

29782. Do they go to Coimbatore or Pusa?—The third and fourth year students went to Poona this year for a change, but they generally go out to some of our own areas.

29783. You confine your visits within the limits of the Central Provinces?—Yes; it is a question of finance.

29784. Do they visit any of the irrigation works of the Province?—When they were down in your rice tract, they went out to the Mahanadi irrigation works there, but it is not a regular visit.

29785. You do not make it a sort of annual or a part of a regular programme?—No, it would add too much to the expenses of touring. We used to have a fair amount at one time, but we had it retrenched, and one of our lines of retrenchment was cutting down the amount of money that could be spent on touring; we could with advantage increase it at the present day.

29786. It would be an advantage for an agricultural graduate to know something about the Irrigation Department and their activities?—Yes; we could give him that knowledge by means of lectures. I do not know whether he would learn much by looking at water flowing over a weir.

29787. Do the students visit your chief marketing centres, for instance, the cotton or rice marketing centres at Akola, Nagpur, Ra pur?—No; we have not made much of taking them round these marketing centres.

29788. What precisely do you teach them when you teach them agricultural economics?—That is rather wide.

29789. What are the general subjects you deal with?—I deal with the management of land, labour, sources from which capital is derived, a combination of these factors, production, and the general question of the distribution and marketing of the crops.

29790. You have already told us about the short course that you have here for the subordinate revenue officers?—Originally, the course was for senior officers, not for subordinate officers.

29791. It was not for subordinate revenue officers?—No; it is only latterly that a certain number of them have been included for the course.

29792. At the present time, do I understand that there is no arrangement whatsoever to give this course to the subordinate revenue officers?—There are no real *pucca* arrangements; there is not an annual course or anything of that kind.

29793. And neither is there any arrangement for the co-operative officers, the Circle Officers?—There is nothing beyond the fact that we occasionally give lectures to them when they have their own meetings; to give a few lectures at their gatherings.

29794. I think you have a number of teacher training schools in this Province?—Yes, we have the normal schools.

29795. Do those teachers pay a visit to your farm?—Occasionally they do so; the students in the normal school in Nagpur do so, and in other places, when they are near to another Government farm they go there. In most places where we have a Government farm there is a normal school.

29796. If suitable short courses could be arranged, do you think you have adequate facilities in your College for training the co-operative officials, the normal school students and the subordinate revenue officers?—We should have to increase the staff; at present my staff is fully worked

29797. Given the staff, you can do it?—Yes.

29798. Have you a college council?—No.

29799. Does the teaching staff often meet?—Very rarely; they do not meet officially.

29800. What fundamental research is being carried on in this institute in Nagpur?—Investigation of the soil, soil moisture, and nitrates.

29801. In Pusa, Dr. Harrison is engaged in some of the problems; I want to know whether you are carrying on any fundamental work here which is not being carried on in the Central Institute at Pusa?—I am sorry I do not really know in detail what they are carrying on at Pusa. We are not in very close touch with Pusa; we do not have much to do with them.

29802. About your suggestions for a central organisation, would you agree with me that the activities of other departments such as the Departments of Co-operation, Education, Public Health and Irrigation, have a direct bearing on the agricultural progress of India?—Centainly the Veterinary Department and the Co-operative Department have.

29803. You would include irrigation?—Yes.

29804. Would you not include, for instance, the Education Department?—That would make practically every department of Government; they are all working for the same end. You would make it too big if you include all that.

29805. You would include the Co-operative, Veterinary and Irrigation Departments; and you think that these three departments have a direct bearing on agricultural progress?—Yes.

29806. Would you include their representatives on the Central Advisory Board?—No, I do not think I should, if you were to stick to the subjects which I have suggested that these committees should deal with. If you increased the number of bureaus or sections it might be necessary.

29807. On page 200, you have given statistics about the occupations of the students that have passed through your hands. You say they are employed "In other Government departments in the Central Provinces." What are the departments?—In the Revenue Department, and one of them is in the Education Department

29808. What proportion of these boys has had opportunities for practical agriculture from the financial point of view, if thay wanted to go in for agriculture?—A great number of them would not have had the money; that is where the trouble was. In the early days we got sons of poorer men with holdings of 20 to 25 acres. A large number of them are agriculturists, but a great number of them have no financial backing.

29809 If they had financial support, this number of 30 engaged in private farming would have perhaps increased?—Yes, distinctly.

29810. Could you tell us something about the agricultural associations? What is their composition?—They are really the leading practical agriculturists of that particular tahsil. You have first the District Agricultural Association, then the Tahsil Association, and then the Circle Association, the circle is the Revenue Inspector's circle. They are only developed to a certain extent in the northern part of the Province at the present time. The District Association consists of men selected from the big men; the Tahsil Association is somewhat on the same lines, the idea of these smaller associations is rather to get hold of practical agriculturists who are unable to open their mouths in anything like a big association.

29811 Who runs them?—We run them We have got our Agricultural Assistants They go round and work them with the aid of the people.

29812. You have an officer in the circle?—There is the Agricultural Assistant in the tahsil, and he has perhaps two or three of these associations under him.

29813 Would you like to have demonstration plots attached to these associations?—The ideal would be that each association should have its own seed producing centre.

29814. You suggest the introduction of cassava as a new crop; is there any great scope for it?—I do not think there is great scope for it I only suggested it as a high food producing crop which I have grown on the college farm in the early days; it produces a large quantity of stuff.

29815. *Sir Ganga Ram*: Is it produced anywhere else in India?—It is produced in Southern India.

29816. What do they call it?—I know it by no other name than cassava.

29817. *Prof. Gangulee*: Your experiments here in connection with cassava were successful?—Yes.

29818. You did not try it on a field scale?—No; I tried it only on a half acre plot

29819 Do you think that there is any prospect for ground-nut?—I think there is considerable prospect for ground nut, primarily in the cotton tract.

29820. Are your experimental farms in the cotton tracts carrying on experiments to see if ground-nuts can be introduced?—The crop is grown on all the seed and demonstration farms and also at Akola.

29821. In answer to the Chairman, you said you had seven Assistants?—There are seven directly associated with the agriculture of the College.

29822. And they do not carry on any research whatsoever?—No, there is no time.

29823. They are not capable of carrying on any research, even if they had time?—They have all done a certain amount of what I might call investigation work rather than work of research, but it has never been much in evidence, not because of their not being able to do it but because the men have not had time to give attention to it. They do work in connection with crop improvement and things of that kind, but it is not serious because there is no time for it.

29824. *Mr. Calvert*: I gather that the export tax idea is pretty dead, and I will not follow it up any further?—I have nothing more to say on it.

29825. You do not support the idea of an export tax, after your discussion with Sir James MacKenna?—I do not*.

29826. Do you teach your students on the rural economic side that an export tax might do any good?—I do not call it a tax, at the rate of an anna on a cwt.

29827. At the rate of 3 or 4 annas a cwt. it will come to Rs. 2 an acre given a 10-maund crop?—I was thinking of crops like linseed and other crops of higher money value.*

29828. You do not believe that the export tax would reduce internal prices?—An anna on 100 lbs. of wheat is not going to make much difference.

29829. I gather that nothing is being done with regard to fruit and vegetables?—Nothing really.

29830. While you have been able to get a Second Botanist for cotton?—Yes; he is paid by the Indian Central Cotton Committee

29831. Is it a safe guess that the export crops are receiving more attention than crops for internal consumption?—They are, I suppose; the main staples are naturally receiving greater attention. If you have got only a comparatively small area of fruit and vegetables and things like that, I think they must give way for the time being.

29832. In this Province of very petty cultivators, is much being done on the crops which respond to intensive cultivation such as fruit and vegetables?—Generally speaking, as a department, we have not tackled what you call petty crops.

29833. The various departments we have seen so far seem to me to have ignored the food of the people and concentrated too much on the export crops?—A greater part of the rice grown in this Province is eaten in the Province, as also *juar* and wheat.

29834. You have not got a whole-time Botanist on rice or on wheat?—No.

29835. But you have one on cotton?—Some one else finds the money for him.

29836. But no one finds money for the food of the people?—The Government is finding money; one man is engaged for all these things.

29837. Have you any figures which would let us know the rough cost per student graduated from this College?—It is about Rs. 700 per annum.

29838. That is, roughly, Rs. 3,000 for the course?—Yes.

29839. And most of those do not take to farming on their own account?—Very few do.

29840. Can you explain why agricultural education, alone of all types of education, does not result in a student practising what he has been taught?—Because in many other cases, medicine or engineering for example, he does not require much capital to start with. An engineer or a doctor begins on a very small scale and he succeeds in getting a practice. But in agriculture it is purely lack of capital that prevents the great number of men taking it up. We have cases of students who join the department and then, after serving for some time and securing some capital, they go back and do farming on their own account.

29841. Do you think that one reason may be that your curriculum is not adapted to the agriculture of the country side?—I think it is adapted.

29842. But you are not teaching them how to bring money out of 10 acres?—No.

29843. The typical size of the holding does not control the curriculum?—No.

29844. You think that is correct?—The general agricultural curriculum applies naturally to the 10-acre holding. But what I am arguing is, if a student returns to the land after a four years' training, he cannot get an adequate return from 10 acres for what has been spent on his training.

Vide Appendix I.

29845. Could you get a good living on 10 acres of intensive cultivation?—Yes; if you have money and dig wells and produce good crops. Nearly all our land is unirrigated. Our average yield per acre is very low when compared to that in other Provinces.

29846. Does your Court of Wards employ your B. Sc's. in Agriculture as managers?—We have had applications from the Court of Wards for these men just recently and a few have been employed; but these appointments are not very stable. After a time the Court of Wards may give back the estate and the man may be pushed out so we are trying to lend them men from our own department.

29847. It is a possible opening for the student?—Yes.

29848. Surely if he could find employment in the Court of Wards he might ultimately become a good land administrator?—Yes, if he gets the opportunity.

29849. You put land improvement as one of the causes of agricultural indebtedness?—Yes, as one of the causes of borrowing.

29850. Do you think that it is really a cause of borrowing to any great extent?—Yes, to as great an extent as that for unproductive purposes.

29851. Is this answer here based on any detailed enquiry into borrowing or is it a general opinion?—It is a general opinion based on conversations with people. It is not based on any systematic enquiry into the sources from which money has been borrowed.

29852. Has any enquiry been made into the causes leading to mortgages?—No; no enquiry has been made.

29853. Your opinion that mortgage "supplies an efficient business farmer with the means to secure working capital" is not based on any enquiry?—It is based on general knowledge, my own experience is that that is so in other parts of the world.

29854. In this Province, do you think really there is mortgage, to any extent worth mentioning, to secure working capital?—The difficulty is that most of them spend on unproductive purposes or they are much in debt.

29855. Two remarks which you make seem more or less inter-connected, one that malguzars look for their income to loans made to their tenants?—Yes; a considerable number of malguzars do look for their income to the loans made to tenants.

29856. Later on you say that money is invested in land but very few do so with the intention of farming?—They invest in land but a good deal of it is leased; they invest in the village but they do not carry on much home-farming on it.

29857. The necessary inference that strikes me is first that moneylending pays better than agriculture?—I think it probably does.

29858. And that the ownership of land is more profitable than the cultivation of it?—But I think cultivation could be made profitable.

29859. Have you taught them intensive cultivation?—No.

29860. Here you mention about the cost of seed in the case of *berseem*, and in the memorandum you mention about the cost of seed in the case of wheat. Do you think the cost of seed is a deterrent on the expansion of wheat and *berseem*?—I think it is the chief deterrent. Irrigation is not sufficiently plentiful to irrigate much of cold weather crops; but I think the price of seed would tend to deter persons from starting them. Unless one has got very valuable cows, it does not pay him to grow *berseem*.

29861. This morning I think you told me that the gross outturn of wheat might only be six times the seed?—Yes, in the north of the Province.

29862. What would be the proportion in the case of *berseem*?—It is purely grown for fodder; you can get 20 tons of green food on one acre of *berseem*.

29863. What is the proportion of the seed as against the value of the crop?—The value of the crop would be Rs. 120 per acre.

29864. And how much for the seed?—About Rs. 20.

29865. You say a large percentage of the bigger landowning class takes no interest in agriculture, while in the memorandum it is repeatedly stated that the propaganda and demonstration are directed towards the bigger landowning classes?—A large number of landowners do not take interest; if there were more landlords taking more interest we should make more progress. There are, of course, certain people, malguzars and others, who do take interest and our efforts with our limited staff are directed towards them. All the same, there are a large proportion in the northern districts, certainly in the Chhattisgarh Division, who take little or no interest in agriculture.

29866. You make the statement here that the bigger landowning class takes no interest in agriculture, and yet repeatedly the bigger landowners are referred to in the memorandum Why concentrate your efforts on classes which you describe as practically useless?—We do not concentrate on these bigger landlords. But there are big landholders in the north of the Province and other places.

29867. Why should not demonstration and propaganda be directed towards the people that live from the soil?—The demonstration is carried out in the villages too If by this you are led to understand that we are only concentrating on the bigger landholders of the Province and do not look to the smaller cultivator, then you are led entirely astray by this memorandum.

29868. In the memorandum the poor cultivator does not get a hearing at all?—I wish to contradict that; a great deal of work is done to help the cultivator. In some parts of the Province, if we had to depend simply on what we got from the landlord, we should never get anywhere.

29869. You are really getting at the actual cultivator who lives on his crops and not at the man who lives on what he makes by moneylending? No, that man does not take any interest in agriculture; he does not even come and look at it

29870. *Mr. Kamat*: You must be familiar with the economics of the cotton crop in Berar, and you know to what extent it pays per acre in normal years with normal prices?—I would not like to give figures straight away as to exactly how much it pays; the prices have been so up and down in recent years with regard to both expenses and returns. This year has been a dead loss.

29871. I say in normal years of rainfall and with normal prices: say the prices of this year, which I am told are very low?—In this year I should say in most cases it is a loss. At the present year's prices and expenses, the expenses being practically those of last year, cotton growing would not pay carried on under present conditions, there would have to be a reduction of cost. Labour prices will undoubtedly fall during the coming year.

29872. Taking the last two or three years' prices, it would pay?—Yes, undoubtedly; it must pay: the acreage which has gone into cotton of recent years shows that it does pay.

29873. Cotton is the principal crop of this Province. Have you worked out how much it pays per acre, taking the prices of the last two or three years?—If you give me a little time I could work it out and let you have it, but I have not the figures now.

29874. You cannot give me a rough idea as to how much per acre cotton pays?—No, prices are so varied; I can work out the rough idea and let you know.

29875. Very well. You say that agriculture is not popular because the standard of living of the student class is higher than that of the cultivator class, and as farming returns now stand a man of the middle class finds it difficult to make a living and provide for his needs?—Yes, his standard of living is higher than that of the cultivator in the village.

29876. When students pass through your college and enter Government service how much per month on an average satisfies them as a starting salary?—The Certificate class get Rs 50 per month, and the others get Rs. 70.

29877. What are the prospects of graduates of your college in Government service? Will they be satisfied with, say, Rs. 300 a month ultimately?—A good number certainly would not look for more than that.

29878. That is an index to the standard of living which they themselves expect, Is that right ?—Yes, I suppose so.

29879. If they expect a starting salary of, say, Rs. 50 a month, which means Rs. 600 per annum ?—Yes.

29880. Now coming back to the cotton crop and its yield per acre, could you give me an idea as to how many acres would give him that Rs. 600 per annum to start with ?—About 15 to 20 acres I should think would give him a gross Rs. 600.

29881. If you turn to page 51 of the *Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar* (*see* page 21 above) you will find that in describing the outlines of the Degree course in your College, it is said : "The second year practical agriculture apart from the time given to agricultural engineering, takes up about ten and a half hours per week in three periods." Then there is a description of how the students are encouraged to carry on practical agricultural work on plots of 10 to 12 acres ; "work is done co-operatively under the supervision of an assistant. The land, implements and bullocks are supplied by the principal as landlord. The class undertakes to make certain returns of fodder crop and to carry out land improvement in lieu of rent. . . The field work is done by them and they take the profits In favourable years as much as Rs. 470 have been received." In reply to my colleague, Mr. Calvert, you said that a 10 acre plot would not be suitable for an average student ?—The area on the College farm which is laid out for this particular work is a 10 to 12 acre field ; it is laid out on the lines of a small farm of about 8 or 9 fields ; it is kept to that area partly because I have not got time for the class of work on bigger areas ; I cannot occupy their time too much on this kind of manual work, so that I keep the area down to 10 or 12 acres, which is as much as they can work in the short time they have at their disposal per week.

29882. That is a matter of detail ; the fundamental fact remains that, on an average, assuming they have the land from the principal as landlord, they do make some profit ?—Yes. The Rs. 470 was in a very good year.

29883. Rs. 470 is an extreme figure, but on an average they make some profit ?—Yes, every year they get money.

29884. The object of teaching them agriculture is to enable them to do better farming, more intensive farming, than the average cultivator who has not received an agricultural education ?—That is true.

29885. So that surely, if you have given the right kind of education, the agricultural graduate must make more on 10 acres than the ordinary cultivator ?—Yes.

29886. Putting those two things together, cannot they make Rs. 600 per annum to start with when you send them out from your college, if, as you say, cotton pays ?—Yes, I should say so.

29887 You see what I am driving at ?—Yes, if they have got a sufficient area of land to work on, I should think they could make Rs. 600

29888. Then how does this proposition stand, that agriculture is not popular because the middle-class student cannot make enough for his standard of living ?—Rs. 600 is apparently going to be the limit, is it not ?

29889. No that is the beginning ?—They have only that area of land ; unless they are going to have more capital to buy a larger area of land, or can secure the land in some way their income is going to be limited to Rs. 600; there is not much prospect of extension when the child comes and there are the additional expenses incidental to the family. .

29890. Do you mean that if they do more work they will not be able to make more money than the average man ?—Yes. They can raise a little more, perhaps 5 or 10 per cent, but the area is small.

29891. What is the minimum area that would be adequate to enable an educated graduate to make a decent living ? Would 20 acres be the least ?—Quite the least ; I should not like to do it on 20 acres on most of the dry cropping in this Province ; except on very good soil you would probably want, I should think, about 50 acres. I am not now speaking of an irrigated tract; in an irrigated tract under the irrigation canals you could get along with considerably less, but talking of the dry tracts of this Province I should say you would want 50 to 60 acres.

29892. Then, if the agricultural graduate leaving your colleges wants to do farming, he cannot subsist on less than 50 acres of land ?—No.

29893. Small cultivation would not be of any use to a man who wants to take agricultural training ?—Yes, that is what I am trying to impress on students who come here ; if I ask a student how much land he has got, and he says he only has 20 or 25 acres, I tell him it is not worth his while to take a four-year course ; the two-year course would be sufficient.

29894. And whatever intensive cultivation he may do by his special knowledge, if it is only a 10 acre holding, it is not worth his while to take the agricultural course ?—No, on unirrigated land.

29895. In your memorandum you emphasise the fact that imported implements are hardly suitable for the Indian cultivator ?—Yes, a great deal of the imported implements, as they are, are not suited to the Indian cultivator, they are too delicate.

29896. The imported implement, designed as they are, are unsuitable for the illiterate cultivator of this country ?—Yes, I say that most of the modern improvements of the last twenty years have been devoted to small details which tend to help the working of the machine but add to its delicacy and do not affect the fundamental part.

29897. If, therefore, your opinion is right, I think it follows that it is no use teaching the people that their agriculture does not pay because they do not use modern implements, because those modern implements are not at all suitable ?—No, you have understood me wrongly ; the principle of the modern implement is right, it is the actual machine which is unsuitable.

29898. The cultivator needs an improved implement, but the implements which are placed in his hands are not suitable?—As I say, a great number of the improvements are improvements which are too delicate for the purpose. I think I gave an example in the case of ploughs ; a plough such as is made by Kirloskar has all the fundamentals which are needed, as compared with the Meston plough it is heavier, stronger, and, if I may use the word, a coarser implement which it is not so easy to work with ; if you give the ploughmen on our farm the choice, they will at once take an imported implement, because it is easier to handle and they are more or less skilled labourers, but in the hands of an unskilled labourer these details, which help the skilled worker, are apt to get out of order.

29899. *Prof. Gangulee*: Does the inversion plough work satisfactorily?—Yes, it works perfectly all right. But if you take the average machine which you see in a Western Show, the sort of thing that a firm might import with the intention of trying to sell it in this country, it is very often delicate in the sense that it has been developed to a higher standard than the ordinary Indian ploughman can use.

29900 *Mr. Kamat*: Therefore, in order to make agriculture pay with the kind of implements which are suited to the country, side by side with other things you require an agency in this country to manufacture implements suitable to the intelligence of the cultivator ; is that right ?—Yes.

29901. That problem has not yet been solved?—First of all, you must have a man to design the implement; that is where the Agricultural Engineer comes in and we have had very few Agricultural Engineers.

29902. This problem has been neglected by most of the Local Governments has it?—Yes.

29903. *The Chairman:* Who teaches animal husbandry in the College?—One of my staff who was trained in the College itself and has since had two years training in dairying and animal husbandry at Bangalore.

29904. Is he demonstrating the use of the silo?—That is demonstrated at the College dairy farm where we have two pit silos and one tower silo.

29905. Is it in use at this moment?—Yes.

(The witness withdrew.)

MR. R. G. ALLAN.

APPENDIX I.

A Note on Export Cess.

Question 29825. You do not support the idea of an export tax, after your discussion with Sir James MacKenna?

Answer. I do not.

To make my views clear, I desire to state that I favour small cesses on the exported agricultural products of this country. I believe that if kept small and governed by the quantity and relative values of the products that these would not affect the prices obtained by the grower.

If they did so, the reduction in value to the grower would be extremely small per acre and would but represent a co-operative financing of efforts to improve the outturn, quality and money value of his crops. A cess levied on export appears easier to collect than one based on the acre and at least allows of the possibility of part payment by others.

Question 29827. At the rate of 3 or 4 annas a cwt. it would come to Rs. 2 an acre, given a 10-maund crop?

I consider that the inference which may be drawn from this last question is likely to be misleading.

(*a*) It assumes that 3 or 4 annas per cwt. was specified for wheat in my answer to the questionnaire. This was most certainly not the case in regard to crops like rice or wheat, in which the amount grown and exported is considerable.

The higher cesses were suggested for the more valuable commodities or for commodities such as bones, which might be better left in India, if we can assume that such a small export cess as was suggested would affect export adversely.

(*b*) It suggests that the cess would bear on the cultivator of wheat more heavily than the land revenue does.

This is misleading.

In making this statement—

(1) The highest cess is assumed At an anna per cwt. the charge would be 7 annas

(2) The whole of the 10 maunds crop is taken as contributing to the cess, whereas from any individual acre only that portion which corresponded to the fraction of the whole crop, as is exported, should be taken in estimating the pressure of such a cess on the individual acre

My suggestion was on the exported grain only, not the whole crop.

Approximately this is about ·06 of the whole crop. In other words, the pressure of the cess on the produce of one acre of wheat can only be calculated on 800 × ·06 lbs or 48 lbs.

At the rate of 1 anna per cwt. of exported crop this would cost the individual acre, assuming that the grower had to meet it, which I am not prepared to admit, distinctly less than half an anna and not Rs. 2 as the inference implies.

I attach a statement which I had prepared when writing the answers to the Questionnaire, but which I did not include, as it appeared too detailed, and as the actual rates required to make the cesses equitable demanded more time and data than I had at my disposal. The table will, however, provide a rough guide as to the income which might be derived and to the pressure on the individual grower, if it is proved that he would pay for the service so secured.

MR. R. G. ALLAN.

Statement showing possible application of Export Cess.

Object under cess.	Total area cropped (in thousand).	Approximate yield (in thousand).	Approximate export (in thousand).	Proportion of export to yield.	Cess per cwt or bale.	Approximate research contribution.	Average yield per acre.	Approximate gross crop valuation per acre on primary market quotations.	Proportion of crop per acre contributing to cess and paying at cess rate per cwt. or bale.	Incidence of cess per acre as possibly adding to cost of production.
1	2	3	4	5	6	7	8	9	10	11
Cereals—	Acres.	Tons.	Tons.		Annas	Lakh Rs.	lbs.	Rs.	lbs.	Annas.
Rice ...	80 000	31,000	2,260	·073	½	14·05	850	82	62	·25
Wheat ..	31,000	9,400	545	·058	1	6·87	840	52	49	·43
Oilseeds—										
Linseed ..	2,300	510	346	·67	1	4·32	460	41	308	2·7
Rape .	4,000	1,172	310	·26	2	7·75	510	45	132	2·20
Ground-nut ...	2,330	1,078 (831)*	327	39	1½	5·80	980	95	353	4·65
Sesamum ...	5,270	488 bales.	36 bales	·074	3	1·35	269	33	18	·48
Fibres—										
Jute ...	2,700	7,950	700	·087	6	2·62	1,160 (2·9 bales.)	159	101	1·50
Cotton ..	25,000	5,700	3,450 tons.	·60	4	8·60	104	*42	62	·62
Animal produce—										
Bones ...	...	...	16,700	...	4	2·62	...	...	...	...
Hides ...	...	...	68,800	...	8	6 80	...	...	...	...
						60 78				

**Vide* Note on page 240.

Note on attached table.

Cereals.—The cesses suggested on exported rice and wheat provide incomes roughly proportional to the areas under the two crops.

The figures giving the pressure per acre are low as the resultant of the low proportion of export to yield and the utilisation of a low cess rate.

Oilseeds.—In oilseeds the pressure rises except in sesamum, partly on account of the greater proportion of crop exported and partly because a higher cess is suggested on crops which make a greater demand on soil fertility.

The higher acre incidence in ground-nut is neutralised by the greater average gross value of the outturn per acre. The oilseeds, except sesamum, are thus practically alike.

Fibres.—The suggestions in this group on the table are based on export. It might be more equitable to substitute a cess on total bales produced rather than on bales exported. At 1 anna per bale the income on jute would be doubled and the pressure per acre would be 3 annas, bringing it into a more equitable position when the value per acre is considered.

A cess of 4 annas per bale on cotton would provide about 14 lakhs. The pressure per acre would be an anna.

The approximate figure of Rs. 42 in column 9 against this crop is arrived at by averaging the prices of this season and last for different grades and accepting 104 lbs. as the average yield. When taken into consideration with the greater value of jute per acre, the incidence on the cotton grower appears reasonable.

Cotton in view of its importance, the amount of investigation it demands and the area planted, should provide a relatively large proportion of the general income.

Animal products.—The cesses on bonemeal and hides are suggested as means for providing for research in animal nutrition and in livestock improvement. The cess on hides in view of their high value per ton could be increased.

I have not the data to analyse the bearing of these suggestions on individual Provinces, as judged by the ratio of crops exported by each. If the cesses on the crops are eventually borne by the growers this would give the amount contributed by the growers of each Province to the central fund. Judging, however, by the crops selected, by their specialisation to fairly marked tracts, as the outcome of climate, soil and trade development, and by the amount of cess suggested, I think it will be found that the contribution to a central fund will be reasonably balanced. The contribution from rice from Burma will be balanced by the contribution from cotton by Western India, and the greater wheat export of Northern India by the greater export of ground-nut from Madras, and so on.

Though I believe that at least a fair proportion of the total income will be derived from the consumers overseas and the trade, I do not think that the final source which provides this income is a matter of great concern. What appears to me essential is the existence of a definite fund for the furthering of general agricultural research and the special improvement of the country's chief staples. Further, that this fund should be centrally controlled by an unbiassed body for the fulfilment of these objects in India as a whole.

I look on the fund, whether it be regarded as contributed by the crops and other items on the table or contributed by the Provinces from which exported, as a co-operative fund for the advance and improvement of the agriculture of the country. I do not suggest that all the revenue contributed, for instance, by wheat shall in any one year be spent on wheat or that all the money coming in from the exports of any one Province shall of necessity be returned to that Province.

MR. R. G. ALLAN.

APPENDIX II.

Cotton Cultivation.

Area and cropping.—In the typical cotton tract 15 to 25 acres of good cotton land is managed by a pair of medium-sized bullocks (costing Rs. 175—200). So an area of 21 acres may be said to be a fair unit for a pair. This area would normally be divided into three blocks, two carrying cotton and *juar*. With the cotton there would be a few lines of *tur*. Cotton is the money crop, *juar* supplies the major part of the cultivator's grain needs and the *kadbi* feeds his bullocks.

Assuming 2,000 lbs. of *kadbi* per acre and 40 lbs. as the requirements of a pair, this area meets all the fodder requirements of the pair which cultivates the whole 21 acres.

Assuming that the *juar* crop is primarily for grain and that the *kadbi* is a bye-product, the actual fodder requirements of his bullocks cost him nothing.

An estimate of a *khandi* of cotton seed per head supplies 4 lbs. concentrates per head for practically 200 days, which may be taken as the period during which the animal is in work of such a nature as to make feeding with concentrates necessary. A *khandi* of cotton seed costs between 'Rs. 24 and Rs. 30. The concentrates of a pair may be thus placed at Rs. 54. To this should be added Rs. 20 depreciation, Rs. 10 interest and Rs. 16 for incidentals, salt, implement and harness replacement. Thus Rs. 100 may be taken as the actual cost of a pair.

Actual work associated with a farm of this size would not exceed 150 bullock-pair days of this single pair. On this basis a day's work on the farm is worth 10 annas and 6 pies.

The rotation practised is regulated by the probable price of cotton as estimated on the price prevalent in the local market during the earlier part of the hot weather.

Ploughing.—A good *Kunbi* cultivator reckons on ploughing his land once in five or six years about 5 to 7 inches deep.

If the ploughing is done in January or February two pairs of bullocks are hired for this, while if it is done in April or May (which is rare) three pairs must be hired.

About 0.4 acre of land can be ploughed per day 6 inches deep during January or February and 0.3 at the later date. The cost of bullocks hired for the plough is Rs. 2 per pair per day.

The cost of ploughing in, say, February comes to Rs. 5-8-0 per day or, say, on 2½ days' work, an acre costs Rs. 13-12-0 assuming all hired.

Manuring.—The vast majority of the area under cotton does not get manure. Of the excreta dropped, probably only half is voided in the sheds. Of that voided in the sheds, normally about two-thirds is used as fuel and the balance voided during the rains finds its way on to the land. A really good cultivator needs to manure his land once in six years, applying as his dressing 16 loads of about 800 lbs. each per acre. This costs about Rs. 1-12-0 per load or Rs. 28 per acre on a hiring basis.

Thus, combining deep cultivation and manuring done once in six years, manure Rs. 28, ploughing Rs. 13-12-0, total Rs. 41-12-0, or an annual charge of Rs. 7 per acre per annum, all hired, but less in proportion as he uses his own bullocks and labour.

The combination of rotation, manuring and ploughing, would work out as below:—

	Blocks.		
	A	B	C
1927 ...	Cotton	Juar P	Cotton
1928 ...	Cotton	Cotton	Juar M
1929 ..	Juar P	Cotton	Cotton
1930 ...	Cotton	Juar M	Cotton
1931 ...	Cotton	Cotton	Juar P
1932 ...	Juar M	Cotton	Cotton

P = Deep work. | M = Manure.

Manual labour.—8 annas may be taken as the cost of a man per day. This hired labour cannot be said to work more than 7 hours per day. The cultivator working for himself does a heavier day and covers more. Judged, therefore, by the former standard his work costs less per day, say, from 5 to 6 annas. Again we may eliminate his wages on a daily basis and show them as part of his profit.

The figures given below are thus set out in four columns of cost, in accordance with the conditions heading such column :—

Operations.	Labour and bullocks hired.	Hired labour, but own bullocks.	Himself wages estimated.	Himself wages as profit.
1	2	3	4	5
	Rs. a.	Rs. a.	Rs. a.	Rs. a.
First bakharing ...	1 8	1 4	1 2	0 12
Stubble removal ...	0 12	0 12	0 10	0 4
Second bakharing (May) ..	1 2	0 14	0 12	0 8
Third bakharing (Rains) .	0 12	0 10	0 9	0 6
Sowing, using bakhar and sartas	1 0	0 12	0 10	0 6
Light bakharing after sowing	0 10	0 7	0 6	0 4
Cost of seed and preparation	0 12	0 12	0 10	0 8
First hoeing ...	0 12	0 10	0 9	0 6
First hand-weeding and thinning (12 women at four annas per day).	3 0	3 0	2 8	2 4
Second hoeing ..	0 12	0 10	0 9	0 6
Third hoeing .	0 12	0 10	0 9	0 6
Second hand-weeding (eight women per acre).	2 0	2 0	1 8	1 4
4th and 5th hoeing (rare)	1 8	1 4	1 2	0 12
Proportion of watching ...	2 0	2 0	.	...
Picking, 280 lbs. at 6 annas a maund.	3 12	3 12	1 10	1 0
Marketing ...	1 4	1 1	1 0	0 12
Land revenue ...	2 8	2 8	2 8	2 8
Increment of ploughing and manuring.	7 0	6 0	5 8	5 3
Total cost per acre	31 12	28 14	22 2	17 13

NOTE.—Hired labour for weeding is not infrequently 6 annas per day. This would raise costs by Rs. 2-8-0 in the first two and by Rs. 2 in the last two columns.

A man has been taken at 8 annas per day. This is approximately correct for labour at present, especially if permanent, but has been as high as 10 annas per day. This would increase cultivation cost under the first two by Rs. 1-6-0 an acre and that under the third by 14 annas. An employer of labour using his own bullocks might thus easily have paid Rs. 32-12-0 per acre and the small ryotwari cultivator, estimating his labour cost at the lower figure used in column 4 would have spent Rs. 25 per acre.

The rental has been put above at the revenue figure. Land, however, is not infrequently sublet for 5 or 6 times this figure, raising the cost, in particular to the type farming under columns 4 and 5, to Rs. 30 or more per acre.

Income.—The annual return per acre, allowing that advantage derived by manuring, averages from 280 lbs. to 300 lbs. *kapas* per acre.

Prices have fluctuated.

In 1925-26 it was in the neighbourhood of Rs. 125 per *khandi* of *kapas* and at this figure an average yield gave from Rs. 45 to Rs. 48 per acre. A large grower, as in column 3, secured a profit of Rs. 12 to Rs. 15 per acre and the smaller man doing his own work, as in column 5, a labour wage of Rs. 25 per acre, or less, in proportion to his personal effort.

In 1926-27 the price was nearer Rs. 88 per *khandi*, and the return per acre was Rs. 31 to Rs. 32, while wages had been on a high basis due to cotton prices of the season before and due to a distinct tendency of the class in column 3 above to increase at the expense of the classes in column 4 or 5. In a number of areas the yield was well below the average thirteen anna crop taken above. Under these conditions profits were either small or entirely absent.

It is doubtful whether cotton cultivation would pay with the price of *kapas* at less than Rs. 100 per *khandi*, except under soil conditions of above the average yield.

RAO BAHADUR K. V. BRAHMA, B.A., LLB., M.B.E., President, Berar Co-operative Institute, Limited, Amraoti.

Replies to the Questionnaire.

QUESTION 2—AGRICULTURAL EDUCATION.—I was Vice-Chairman of the District Board, Amraoti, from 1916 to 1924 and have been the Director of the Amraoti Co-operative Central Bank from 1912. I am also the President of the Berar Co-operative Institute since it was started in 1923. In my capacity as Vice-Chairman of the District Board, I was in direct touch with the primary schools in Amraoti district and one of the first complaints that I heard from the agriculturists was that the education that was being given to boys in Board schools unfitted them for work in the fields. I also discovered that the curriculum was not designed even to create an agricultural bias in the boys living in villages. I therefore thought of introducing the practice of agricultural operations in village schools in the last two years. My idea was, if the dignity of field labour could be impressed on the minds of students in schools, a double advantage would be served. A distinct bias for agriculture should be created and the objection against sending boys to schools would disappear I hit upon the plan of asking a well-to-do villager to keep one of his fields with a pair of bullocks, after the crops were taken out, at the disposal of school for three months from February to May. Two days in a week, the bigger boys in the school were to be taken into the fields and asked to work in the field with the harrow (*vakhar*) and do what is known in Berar as the summer preparation of the soil (*unal vahi*). Villagers were willing to supply this facility, but I found general disinclination amongst teachers to do this kind of work. My plan was also to take out boys in the weeding season to fields close by, to make them do the weeding and to explain to them the growth of plant-life and the importance of weeding in that connection. Field-owners would be willing to pay for the weeding and the money thus earned was to be earmarked for school picnics. I tried the experiment in some schools, but it did not succeed for want of proper kind of teachers. My answer to the sub-heads under this question is therefore as follows :—

(i) In Berar we have not teachers who can or will teach agriculture to boys in the beginning of their life. There are no schools for the teaching of agriculture in the moffusil. The existing primary and vernacular middle schools can be utilised for creating an agricultural bias and short courses in agriculture should, in my opinion, be attempted in places where we have experimental or demonstration farms. We are no doubt in need of higher education in agriculture and experts. But as in administration so in agriculture let us not be top heavy. The need of the hour is the broad-basing of agricultural education and with that end in view the more the number of village folks we draw in the scheme of education the greater and speedier would be the progress.

(ii) Bera is wholly an agricultural tract with no other source of augmenting its material wealth. The shortage of rain and its unseasonal character of late years have forced people to think of the question of preserving soil moisture. The need of agricultural education is keenly felt and teaching facilities should be speedily provided for in Berar and I should advocate the starting of schools at some convenient place in each of the four districts of Berar. The course may be of a year or six months.

(iii) I would not insist on teachers being drawn necessarily from agricultural classes but as people just insist on a teacher being a trained teacher, I should insist that a teacher should have gone through a course of agricultural education before he is confirmed in his appointment in rural areas.

(v) The main incentive that induces lads to study agriculture now is the chance of securing good service in the Department of Agriculture or in the Revenue Department.

(viii) Nature study as it is done in schools now in villages is hardly useful. Neither boys nor teachers feel any interest in the subject as it is taught in the class-room. Nature study should be attempted out in the fields with special reference to crops grown in the villages and I should think school plots and farms would give better results.

(x) Middle-class youths would be attracted to agriculture in villages and even towns if agriculture is taught to them without being tiresome and if it is demonstrated to them that agriculture affords them maintenance in the same way as service does.

R. B. K. V. BRAHMA.

(xii) Adult education can be popularised by the use of pictures, cinemas and gramophones. I have seen a method in which instruction is conveyed through the eye and the ear more than the head and adults learnt alphabets in three days. We should try every means of visual instruction.

(xiii) The outline that I have given above shows that agricultural education of the rudimentary type in village schools need not be costly. My plan does not require any change in the administration. If the Department of Agriculture, the Education Department and the District Boards or Councils co-operate, better educational facilities could be assured in rural areas with an additional expenditure not exceeding seven to eight thousand rupees in a district per year. Two-thirds of this should be borne by the Government and one-third should be met by the local authorities like the District Boards or Councils.

QUESTION 3—DEMONSTRATION AND PROPAGANDA.—(*a*) Demonstrations and shows illustrative of the use of machinery, agricultural exhibitions and displays such as plough races have done a great deal in popularising the use of machinery. The facility of getting machines at cheap rates has also done a great deal in introducing the modern iron plough in place of the wooden plough. These methods have to be repeated several times before agriculturists begin to appreciate them. The chief difficulty in introducing machinery lies in the fact that in villages even ordinary smiths are not available and naturally cultivators refuse to buy implements which they cannot get easily repaired, and the remedy lies in establishing centres from where spare parts can be supplied and repair work done.

(*b*) Agriculturists believe that field demonstrations are mere shows and will not stand the test in every day life. The basis for this opinion, though largely erroneous, lies in the fact that the Department of Agriculture is not prepared to take up work and demonstrate how it can be economically turned out. For instance, it is maintained that the motor tractor is both better and cheaper but the department is not prepared to undertake ploughing by tractors on a large scale and show that ploughing by tractor can be done cheaper than by the old method. To ensure confidence, the department should take a certain amount of work on contract and do it at cheaper rate.

(*c*) Two methods which will certainly induce cultivators to accept expert advice are as follows: —

(i) That advice given by experts must be demonstrated to be beneficial. Cultivators may be illiterate but they are not ignorant. If an expert is willing to show that his advice will result in benefit even under the conditions which ordinarily obtain in villages, cultivators are bound to follow the advice. But what often happens is that the advice to be followed either requires larger expenditure or does not give certain results. Taking works on contracts and doing them cheaply is the surest way of convincing agriculturists

(ii) The second method is, that the Government should pick up well-to-do men who can afford to take the initiative in adopting expert advice and reward these men by prizes. The hold of the village *patel* and *patwari* on the village is still very large and if these two local persons are encouraged to take active interest in new methods they will be able to popularise the advice of experts.

QUESTION 4—ADMINISTRATION.—(*c*) (iii) There is great dearth of roads in Berar and even tahsil headquarters are not connected with the district headquarters. Important and rich cotton tracts are not supplied with adequate roads. This is undoubtedly a question of money where permanent and *pucca* roads are intended. But village roads and roads to markets are neglected. Some sort of compulsion should be introduced by law on District Councils in maintaining roads, easing *nullah* approaches and filling up ruts. One of the scheduled duties of a village *Mahar* who is paid by a cess from the cultivators is to do petty repairs to all fair weather roads within their village boundaries. Revenue officers should exact these duties from them through the *patel* of the village. With the formation of District Councils this work is being neglected by the revenue authorities as appertaining to the District Councils and as the latter have not sufficient funds village roads suffer. "Good roads are cheap at any cost" and I should even advocate legal provision being made by which every adult male or female in a village should be compelled to supply a day's labour in a year for repair of village roads A distinct policy should be laid down as to what roads should be constructed and maintained by Government and what by District Councils. A well-defined policy is necessary. The District Council should devote its funds on approaches to villages and bazars and Government should finance all main roads leading from

taluk to taluk and district to district. Maintenance of roads after construction should as far as possible be handed over to District Councils. Government would thus be able to save some amount of money.

QUESTION 5—FINANCE.—(*a*) The best and the safest way to finance agriculturists is to start village co operative societies. No other method will succeed so well for short-term loans. For long-term loans, land mortgage banks on co-operative basis should be started. Government should come to the assistance of these banks by helping the floating of debentures and subscribing to them. An amendment of the Indian Trust Act in respect of the securities in which trust money could be deposited should be effected so as to allow that money to be deposited in co-operative banks. The Imperial Bank Act should also be similarly amended to permit that bank to put money in these debentures. The Conference of all Registrars of Co-operative Societies held in Bombay in January, 1926, has laid down the lines on which these banks should work and no time should be lost in giving effect to the resolutions adopted by the Conference.

QUESTION 6—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The main causes of borrowing are :—

(1) Unexpected fluctuations in prices of produce.

Cotton rates differ from year to year and generally a cultivator frames his estimate of expenditure on the highest price fetched by his crop in the last season in the hope that his crop would fetch him the same amount again. Cotton prices depend on the world situation and as this cannot be controlled by local measures the only way to remove this cause of indebtedness is to preach to the cultivator the lesson that his expenditure must be based on the lowest rate and not on the highest.

(2) Careless disregard of income and expenditure.

Generally speaking, an agriculturist spends in expectation of income and seldom after collecting his actual resources. To prevent this, the importance of framing family budgets should be taught in the schools. Through co-operative societies and in the top classes of vernacular middle schools, an attempt should be made to show the advantages of family budgets and how easily they can be framed if attention is paid to this. Women of the farmers are thrifty and if attempts are made to start 'Thrift Societies' this cause of indebtedness may be remedied

(3) Social customs which compel a person to incur expenditure disproportionate to his income.

This is a chronic evil and can only be remedied by continuous education and propaganda. Co-operative societies for curtailing ceremonial expenditure is a remedy well worth trying.

(4) Lack of credit facilities and general shyness of capital in going to the relief of agriculturists.

(5) Insufficient appreciation of the fact that agriculture like other industries requires floating capital.

It is the experience of every body that a cultivator is in need of money most between the months of June and August for cultivation, *i.e*, for seed, for weeding and for collecting his crop. He has seldom money on hand for these purposes and has therefore to run to moneylenders and borrow it at any rate of interest. The formation of village banks exempting them from the Indian Companies Act when their capital does not exceed Rs. 25,000 is a remedy well worth trying. Another remedy is to make advances from Government treasuries at a settled rate per acre and recovering the amount at 9 per cent interest as land revenue. Post Office Cash Certificates can be popularised in villages and Government can collect a fund this way and utilise it on short-term loans as above. A still surer and better way is to encourage co-operative societies to do this work and to realise the amount so advanced as arrears of land revenue.

(6) Fixing the maximum rate of interest that can be demanded.

There is no provision at present in the law anywhere laying down the maximum rate of interest recoverable. It should be laid down by statute that interest at more than 36 per cent per annum shall not be recovered by a suit or by any other legal process. The Hindu Law rule of *damdopat* should be made applicable to all persons and in all cases.

R. B. K. V. BRAHMA.

(7) Reckless cultivation of fields on leases.

This cause has come to the forefront for the last twenty years. With the spread of education people begin to think that they should cultivate land of others rather than serve Service is naturally regarded as derogatory and there is an unhealthy and reckless demand for land on leases. Crops do not always come up to expectation and much of latter day indebtedness is due to this reckless leasing of lands. Here again the remedy lies in education on right lines.

(ii) The source of credit are—

(1) The village moneylender who is willing to accommodate a cultivator at all times.

(2) The commission agent or *adtya* who finances a constituent against the security of crops.

(3) The village seed sellers.

(4) Co-operative societies.

The last is the best as it looks to the interests of the borrower more than to those of the lender.

(iii) The reasons preventing repayment are :—

(1) Bad seasons.

(2) Innate habits of unpunctuality.

(3) False notions of dignity preventing a man from finding out work after work in the fields is over.

(4) General rise in the standard of living without corresponding increase in the production of wealth ; in other words, habits of spendthriftness encouraged by tempting and showy ways of modern civilisation.

(*b*) I would advocate the enforcement of the law of *damdopat* by which a creditor is restricted to recover the amount of interest at any one time not exceeding the principal, and spread of the principles of thrift through co-operative societies. I should not advocate legislation in any other respect.

QUESTION 7—FRAGMENTATION OF HOLDINGS.—(*c*) I should advocate legislation in respect of widows having only a life-interest. I should like to have a provision made barring all suits filed after twelve years by reversioners claiming the estate after the widow's death, and to keep disputes out of court. I would like Arbitration Societies as in the Punjab established everywhere. For persons who do not join such societies I should like to have judicial Village Panchayats established which will be empowered to settle money claims and lease money suits of the value of Rs 250 or under.

QUESTION 10—FERTILISERS.—Towns produce a lot of natural manures and in almost every town this manure is wasted. I should have Agricultural Associations or Development Associations established to whom Municipal Committees and Sanitation Committees would sell their manures at a concession rate in order to enable these associations to bind this manure into shape, to make it easy of transport and to enable common cultivators to buy it for their use. In Berar, the practice of using cowdung as fuel is on the increase on account of the scarcity of wood fuel. I should encourage the establishment of fuel depôts. A regular and continuous propaganda dissuading people from using cowdung as fuel and preserving it for field manuring and also for preserving cattle urine for manurial purposes will certainly result in improving many fields.

QUESTION 11—CROPS.—(*a*) (iii). DISTRIBUTION OF SEEDS.—The Department of Agriculture should utilise the machinery of co-operative credit societies for distribution of seeds. At present the department is not in a position to meet the demand for seeds required. The department should organise seed stores on co-operative basis in as many places as possible. To encourage sale of good seed, the department should establish licensed sellers who will be selling good seed at fixed rates.

QUESTION 14—IMPLEMENTS.—(*b*) Machinery may be popularised if steps are taken by Government through the Agricultural Department to organise small parties in charge of a set of useful implements like a chaff-cutter, winnower and a tractor-plough, touring round in villages and undertaking work at rates cheaper than what it costs agriculturists to do similar work. Such parties should also undertake to sell implements and supply spare parts and also arrange periodic inspection to advise agriculturists on wear and tear and the replacement of parts.

R. B. K. V. BRAHMA.

QUESTION 17—AGRICULTURAL INDUSTRIES.—(*a*) In the months of April and May, an agriculturist works in his field from 7-30 a.m. to 10-30 or 11 a.m., *i.e.*, for about four hours. In June, after sowing begins he works for 5 to 6 hours a day. From July to September, he works for 5 to 6 hours a day. In October and November, he works very little, say, about 2 hours. From December to the middle of February, he is busy in harvesting his crops and works for about 6 hours a day. The total number of hours he works in all according to my idea is 1,132 hours and taking 8 hours as a day a cultivator works for 179 or 180 days or six months. The real slack season for an agriculturist in Berar is from the middle of February to the end of April, *i.e.*, for 2½ months. In other months, he has not usually a full day's work. This calculation holds good for an average cultivator who cultivates from 16 acres to 25 acres of land.

(*b*) With a view to give training for necessary subsidiary industries and as a means for encouraging their adoption, I would advocate that in vernacular middle schools classes for the teaching of handicraft should be attached. As these schools are situated mostly in rural areas, it will create a bias for such industries in the early part of the life of a cultivator and he will in after-life easily take to the art that he has learnt, as a means of additional income. The industries that strike one as easy of adoption in Berar are—

(1) Rope-making; (2) basket-weaving, (3) tailoring, (4) the industry of wheel-wrights; (5) spinning and weaving; (6) dairy-farming; (7) fruit and vegetable growing, (8) tape-weaving and lace-making, and (9) carpet and blanket-weaving.

Suitable implements for these industries should be made readily available. If the technical institutes and schools for handicrafts in the Province were asked to manufacture some selected implements, a supply could be assured at a reasonable cost. Government aid should be granted where necessary for purchasing these implements.

(*d*) and (*e*) In these days of oil-engines, it should not be difficult for industrial concerns to move to rural areas; and certain amount of employment would undoubtedly be available to cultivators from January to June, when their work in fields is easy. If a set of a few gins worked with an oil-engine could be established in a village of a moderate size, not only would a cultivator get employment but the labour of moving unginned cotton from village to town and cotton seed from town to country would be saved. The cultivator would, in addition, be able to earn a portion of the profit which the middleman earns by purchasing raw cotton, ginning it and selling the same as ginned cotton in *bojas* to big cotton buyers.

QUESTION 22—CO-OPERATION.—Co-operation applied to agriculture aims at supplying capital at a cheap rate and also making the farmer a businessman in the sense that he realises that he has a definite place in the production and distribution of wealth. By constant practice of the virtues of self-reliance, thrift and mutual help it teaches him to elevate himself to a higher level and learn the art of living in frugal comfort. This involves the abandonment of age-long habits. The change is so great that it may be described to be a complete metamorphosis. In view of the apathy and ignorance prevailing among cultivators, this would require the efforts of a whole host of able men available in the country. An intensive and continuous propaganda is a *sine qua non*. The following steps are necessary :—

(*a*) (i) Steps to be taken by Government —

(1) Government in the Central Provinces and Berar does not spend as much amount on co-operation as other Provincial Governments in India do. This Province is educationally backward. A larger expenditure is really justifiable but Government should at any rate be prepared to spend as much as Governments do in other Provinces.

(2) The development of the movement requires the services of a whole-time competent officer of Government and the Registrar of Co-operative Societies should not have other work saddled on him. He should not be changed frequently as the incumbent of the office does not feel any real interest in his work. It is further necessary that he should be an Indian, as he is able to talk to people in their own language, mix with them and appreciate their difficulties and inspire confidence by his advice and guidance.

(3) Conditions in Berar differ so materially from those in the Central Provinces and problems in Berar are sometimes so peculiar that it is desirable that there should be a separate Assistant Registrar in charge of Berar. Berar offers a good field for the development of co-operation and it would be well if an officer of the grade of an Extra-Assistant Commissioner is given to him. This Assistant will be in charge of the routine duties and the Assistant Registrar would be able to devote himself to the spread of the movement on right lines.

R. B. K. V. BRAHMA.

(4) It is very desirable that the Registrar and his Assistants should have an acquaintance with the working of the co-operative movement in foreign countries and it would repay Government to grant study leave to these officers. They should also have an intimate knowledge of the movement in the different Provinces in India and should be permitted to lead deputations of non-officials to sister Provinces so that they may profit by the example set up there. Two such deputations in the past have given a distinct impetus to the movement in the Province.

(5) Even in the subordinate ranks of the service it is necessary to insist on co-operative training. Government should be prepared to bear the expenditure of having men in the service trained in the principles and practice of co-operation and should also be prepared to maintain a class for persons wishing to enter the department to get qualified for the work. It is equally necessary that there should be refresher courses for permanent servants Men who are better qualified and better trained can alone cultivate the missionary spirit that is necessary for spreading the gospel of co-operation amongst farmers who are proverbially slow to take to new ideas and methods.

(6) Sympathy and help of the officers of the Department of Agriculture and the Department of Revenue would be very useful. If the village agency of the *Patels* and *Patwaris* is allowed to be at the disposal of the Registrar of Co-operative Societies, an impetus would be given to the movement without much extra cost. Officers of the Revenue and Agricultural Departments are constantly on tour and if in their visits to villages they make a point of seeing village societies and giving them sympathetic advice their visit will not be felt as an "official interference" and a lot of good will be done to the movement.

(7) Government should encourage non-official agencies like Institutes in their efforts about education and propaganda by suitable grants-in-aid. No grants to Institutes are made in this Province whereas in sister Provinces large grants are made.

(8) Co-operation is now a Transferred subject and further progress in the movement is dependent on the vote of the Council. It is therefore very desirable for the minister to be fortified by the advice of experts, both official and non-official. A Board of Co-operation should therefore be established to consider questions arising from time to time and to advise the Minister. It should consist of:—

Minister for co-operation as Chairman and Registrar of Co-operative Societies as Secretary and the following as members:—The Director of Agriculture, a representative of every Co-operative Institute, a representative of the Central Provinces Federation, a representative of the Provincial Bank, a representative of the Central Banks in Berar and a representative of all Central Banks in the Central Provinces.

The Board should meet once every quarter The Board would not cost Government more than Rs. 3,000 a year

(9) Government should materially assist the financing of land mortgage banks as the co-operative movement to-day does not reach the upper class of landholders who are equally in need of capital.

(10) In granting *taccavi* loans to persons who are members of co-operative societies, Government should employ the agency of Co-operative Central Banks and societies.

(11) In suitable places and in consultation with the Registrar, Government should try the experiment of encouraging a village society to carry on savings bank business in that locality.

(12) The Maclagan Committee on Co-operation in their Report in 1915 in paragraphs 218 and 219 point out the necessity of Government taking steps to provide facilities for re-discount to co-operative banks and thereby give to their finance that elasticity without which present stability and the safe progressive development of the co-operative movement appear to be difficult. It is noticeable this year, for instance, that while there is plethora of money with the Imperial Bank, agriculturists find it difficult to get money at reasonable rate of interest. It is for Government to see that money is made available for agriculture when it is not wanted for commerce and this can be accomplished by enabling the Imperial Banks to place their money at the disposal of co-operative societies or by starting an All-India Co-operative State Apex Bank through which re-discount of co-operative paper can be arranged. An attempt made in this Province in this direction failed because it demanded too large a price from the Central Bank and societies.

R. B. K. V. BRAHMA.

(13) It is very necessary for the Government to see that the study of rural economics is carried on by the University and the results of study are taught to all boys and girls in primary and secondary schools. Lessons on co-operation in schools and colleges would leave an impression on young minds which will be of everlasting benefit to them in after-life.

(14) It is desirable that Central Banks should be given the power of recommending suspensions and remissions of land revenue on the lines laid down by Government. Central Banks and financing agencies get a correct idea of the extent of the crop and there is no reason why they should be ignored in the important work of granting suspension and remission.

(15) It will pay Government to occasionally grant scholarships to students to go abroad to study the benefits of co-operation and come back and bring about necessary reforms in the movement.

(16) Development Associations for taluks should be formed and they should work under the guidance of the District Officers who should stand as well-wishers, equipped with requisite knowledge and sympathy to co-ordinate the activities of the Departments of Agriculture and Co-operation, and help the cultivators to advance materially in all directions. Such associations are doing good work in Bombay.

(*a*) (ii) Steps to be taken by non-official agencies:—

(1) The non-official agencies in existence to-day are the Central Banks, the Institutes, the Central Provinces Federation and the Provincial Banks. Central Banks in places where Institutes do not exist are expected to carry on propaganda. Even the Berar Co-operative Institute works through the Central Banks. The activities of these bodies are limited by funds which at present are very meagre and unless they are substantially assisted by Government their work is bound to be small. To increase the outturn of work it is desirable that Central Banks should have sub-committees, and that the Institute's local branches should be specially in charge of education and propaganda. The attention of Central Banks is naturally taken up with questions of finance and unless a special agency is created for education it is bound to be neglected. This is the reason why primary societies in the Central Provinces and Berar are found to be weak. If committees of education and local branches are formed, it would be easy to attract new men who feel interested in the work.

(2) Central Banks as financial bodies have to be maintained in a state of efficiency and it is advisable that these bodies should have a common cadre of servants. These may be worked through the institutes or special joint committees.

(3) Membership of institutes is at present voluntary with the result that great difficulty is experienced in inducing societies and banks in joining them. The Berar Co-operative Institute finds it difficult to differentiate between paying and non-paying societies and works equally for all. It would be well in such cases if the Registrar charged suitable fees to these societies for their education and propaganda and remitted it to the institutes as money ear marked for a special purpose.

(4) Central Banks should be intensive rather than extensive in their efforts.§ ‖It would be well for Central Banks to concentrate their attention on a few societies and make them model ones for other societies to follow. This line of work would yield better results as example is always better than precept.

(5) No efforts are at present made to induce members of credit societies to form associations for reducing ceremonial expenditure or to abandon expensive social customs. Such an attempt is very desirable and necessary.

(6) Central Banks celebrate their annual meetings and while efforts are thus made to acquaint members of primary societies with the affairs of the central financing agency, practically nothing is done in village societies. If these latter are taught to hold meetings and take an annual stock of the pecuniary condition of the society as a whole and the economic betterment of every individual they would soon learn to imbibe the lesson of thrift and self-reliance. If Central Banks are regarded as money-lending concerns now, they are deemed to be so, because in actual practice very little is done to see to the application of money and to assure that it is utilised for productive purposes.

(*b*) The following observations are offered on the types of societies mentioned below:—

(*i*) *Credit Societies.*—(1) In Berar, primary societies are of the Raiffeisen type where liability is unlimited and membership is restricted to the village. On the whole

(*d*) Credit societies have served their object in finding money at cheaper rates. In villages where there are co-operative societies village moneylenders do not quote a rate of interest higher than the one quoted by the society to its members. But while one is prepared to say this and to maintain that commensurate with the efforts made, the Department of Co-operation has achieved success, it is very necessary to bear in mind that greater efforts are necessary to ensure that agriculturists imbibe the real co-operative spirit and the justification of a larger expenditure and greater efforts lies in the fact that if we succeed in improving the lot of farmers we shall be securing national prosperity and happiness, as the Central Provinces and Berar is a country of small farmers.

QUESTION 23—GENERAL EDUCATION—(*a*). Education in its present state is designed to be merely literary. At no stage does it aim at being industrial in the largest sense of the term. Boys coming out of the University schools naturally hanker after service and when it is not available, they become discontented and begin to riot in life. Parents of children in rural areas loudly complain that education in primary schools unfits their children for work in fields.

(*b*) (i) The remedy lies in establishing schools where the boys are given distinct agricultural education while they are learning in schools and are taught industries which should be useful to them while they are cultivating their lands.

(ii) Compulsory education in rural areas is in its infancy in Berar and cannot be said to have taken root. The reasons are :—

(1) Government is overcautious in introducing real compulsion.

(2) Local bodies are unwilling to enforce the provisions of law to compel attendance.

(3) The people naturally feel that without getting a substantial advantage, they are called upon to spare their children for schooling when they can be utilised for adding to the family income.

(iii) Generally speaking, boys in villages enter school at the age of seven and they begin to be useful to their parents at the age of ten in tending cattle etc. As higher education does not afford them greater prospects, there is no incentive to parents to continue their boys till they complete the course of primary training by passing the fourth class.

QUESTION 25—WELFARE OF RURAL POPULATION.—(*a*) Village life should be made more attractive by better roads, by better sanitary conditions and by greater amusements. This would give a stimulus for men of capital and education to stick to villages which are at present abandoned in favour of towns. Schemes for rural reconstruction should be thought of and put in force by suitable grants and facilities.

(*b*) Economic surveys in typical villages are a necessity and no time should be lost in undertaking them as they will act as correctives in many directions and will also indicate the correct line of action to be followed for improving conditions obtaining in rural areas. Study of rural economics would be fostered and when it becomes intensive all persons concerned will begin to think of the ways and means of improving the lot of cultivators.

Oral Evidence.

29906. *The Chairman*: Rao Bahadur Brahma, you are President of the Berar Co-operative Institute, Ltd ?—Yes.

29907. You have been Director of the Amraoti Co-operative Central Bank from 1912 and also President of the Berar Co-operative Institute since 1923 ?—Yes.

29908 You have been Vice-Chairman of the District Board, Amraoti, from 1916 to 1924 ?—Yes.

29909. You have handed in for the Commission a note of the evidence that you wish to give. Is there anything that you would like to say at this stage apart from that which you have already written in this note ?—There is nothing in particular.

29910. I should like to ask you one or two questions on your note. Is the quality of the teacher a great difficulty, in your view, in attaining the ideals of rural education ?—There is some difficulty.

R. B. K. V. BRAHMA.

29911. What are you paying your teachers?—They start from Rs. 15 and rise to Rs. 60 in the primary schools.

29912. Do you think that salary is likely to attract the right type of man?—Not the bottom grades; the top grades might.

29913. Have you familiarised yourself at all with the system for instructing teachers?—To some extent.

29914. Are you satisfied with those?—Except in the matter of this particular agricultural bias that I want the teachers to have, I think the method in normal schools for instructing teachers is pretty good.

29915. Conducting nature study is not a very easy thing for a man to do, is it?—No he must have a real grasp of the matter himself

29916. And he must also know how to present that matter to young children?—Yes, and after that the man must have facilities to impart education in the school. Nature study should not be done in the school-room as it is done at present in many schools. It should really be done outside in the open.

29917 Have you any experience of adult education?—Not much

29918. So that you are speaking here in very general terms?—Yes.

29919. Have there been any experiments in the districts with which you are familiar?—Not in the district from which I have come, but I have seen experiments carried on at Nagpur.

29920. Would you describe them very shortly?—A man named Mr Mandey who has received his training in America, has developed a system of adult education and I have seen his experiments for a long time. He gave a demonstration to us at Amraoti in which he was able to make three men from the street catch the letters and to read within one hour. His is a special system, he tries to attract the mind of adults on particular letters. For instance the Marathi word for grass is put down in the vernacular and he shows a bundle of grass in a picture and asks the adult to remember the bundle, and he then carries the mind of that man through several lines in which this word is repeated and in that way he asks the man to remember that the first word is *ghas* and the second word *sa* and so on, and that is how the man is able to pick it up

29921. Well, that was an experiment in method. Now what happened in practice? Were the public anxious to avail themselves of this opportunity?—Yes, they would be.

29922. Were they in fact given an opportunity in this particular case of undergoing a course?—No.

29923. That was really a demonstration of method?—Yes, they tried that experiment in the Civil Jail here at Nagpur and the Home Member of the Central Provinces Government has given a very good certificate about its success.

29924. Now, in answer to Question 5 in the Questionnaire on Finance, you say that for long-term loans, land mortgage banks should be started? One of the difficulties in this Province is the fact that so many cultivators are on occupancy holdings and have therefore nothing to mortgage?—That is the case in the Central Provinces, but I am speaking of Berar only.

29925. Are there not occupancy holdings in Berar?—No, all ryotwari holdings.

29926. All the cultivators in Berar have something to mortgage?—Yes.

29927. And you suggest that the Indian Trust Act should be so altered as to include that type of security? Then you suggest that the Imperial Bank Act should be amended to permit that bank to put money in these debentures? Do you happen to know whether there is any enthusiasm for this proposal in the minds of the Directors of that bank?—Yes.

29928. Do you think they are eager to invest their funds in loans on mortgage?—Yes.

29929. How do you know that this is the case?—In fact our Institute and some banks in Berar have actually made proposals to Government and have put forward a scheme; they are only waiting for Government to give the necessary facilities to the Imperial Bank to have the power to float our debentures and get this money.

29930. Does the Imperial Bank at the moment lend money to co-operative banks?—It was told to, but there was some difficulty about that. The Imperial Bank tells us that they have this difficulty that they cannot lend money on the security of co-operative paper or even on the security of land mortgages That was the difficulty which the Governors of the banks who attended the Registrars' Conference at Bombay brought to our notice.

29931. Is it within your knowledge that there is now before the Assembly a proposal to amend the Act in the direction which you suggest?—I have simply heard of it.

29932. On page 243 in your answer to Question 6, Agricultural Indebtedness, you suggest the formation of village banks and the exempting of these banks from the Indian Companies Act when their capital does not exceed Rs. 25,000? What exactly had you in mind when you made that suggestion? What functions do you suggest that these banks should carry out?—Outside the co-operative societies, agriculturists do not get money on easy terms The rate that is charged in Berar and part of the Bombay Presidency is usually 2 per cent My idea is that if they can collect the capital which the local people will be able to subscribe, and form a company like a bank, they will be able to lend money to agriculturists who are not members of the co-operative societies at a much cheaper rate

29933. Your suggestion is that the capital of these village banks should be derived from public subscription in the village: is that the idea?—Yes, or from round about the village.

29934. But you are going outside the ordinary Companies Act? You are going to suggest exempting them from the various obligations and restrictions imposed by that Act?—Yes

29935. What particular advantage are you seeking to give them by that exemption?—These people living in rural areas are frightened by the provisions of the Companies Act, for instance, the liability to submit returns on due dates, they think this is too much for them to agree to and to actually carry out in practice

29936. Do you not think that the Co-operative Acts were designed to meet those difficulties?—Yes, but the difficulty in co-operative banks is this that we do not finance individuals. We advance money to societies and the societies are supposed to advance to individuals

29937. Is there any reason why the cultivators should not deposit savings in the local societies?—We are trying to induce them to do so. I suppose rural people will be able to get money more quickly and more cheaply by this experiment.

29938. Do you not think there is any danger of slack management?—I do not think so.

29939. There is one point I would like you to clear up. On page 244, in your answer to the same question, you mention the Hindu law of *damdopat*, by which a creditor is not allowed to recover more as interest than the amount of the principal, and on page 243 you say that this should be made applicable to all persons and in all cases At the moment that law applies when both parties are Hindus?—No, when the debtor is a Hindu. It is only in the Bombay Presidency and Berar that this rule of *damdopat* applies.

29940. You suggest this selective quality should be removed altogether?—Yes.

29941. You talk about the law. What is the position exactly? Is it a law?—We call it a law because it is part of the Hindu Law which is a personal law based on custom.

29942. And the courts pay attention to it?—Yes, as a matter of personal law if is recognised.

29943. Assuming it was generally agreed that it would be well to remove th inequalities at present existing, how would you give effect to that proposal?—If a Act were passed in the Legislative Assembly restricting the power of the individu to enforce a particular rate of interest then the creditor, when he wants to recove his money, will be forced to go to the court within a stipulated time. The credito according to the rule of *damdopat*, must do so within a certain time.

29944. So you suggest the passing of a general Act to make the conditions c *damdopat* generally applicable?—Yes.

29945. Your answer to section 7 of Question 6, where you talk about the reckles cultivation of fields on leases appears to me to contain three separate ideas, whic are associated in your one answer. There is the question of the reckless cultivatio of fields, and there is the question of the desire to cultivate the lands of others rather than to do service, I suppose, as labourers: Is that the idea?—Yes.

29946. Then you refer to the fact that crops do not always come up to expecta tions, and much of latter day indebtedness is due to this reckless leasing of lands?— The situation in Berar is this. From 1918 to 1924 cotton was selling at the enormou price of from Rs. 100 to Rs. 150 per *khandi*. Naturally all the people thought tha agricultural leases would be influenced by these prices and ordinary cultivators wh wanted to take land on lease used to offer more lease money on the expectation tha the high price of cotton would continue, but on account of the general settlemen of the world, and for other reasons, cotton prices have gone down, and the rainfal has not been satisfactory and crops have failed. What with that and with the rate going down, they find they are not able to pay their rents.

29947. Perhaps a better heading would have been 'reckless leasing for th purpose of cultivation'?—Yes. I think so

29948. To go back to my question of a minute or two ago as to the Imperia Bank Act and the limitation imposed on the bank in the matter of lending tc co-operative societies, is it within your knowledge that the Imperial Bank is at present giving cash credits to the Provincial Co-operative Bank in Bombay and also to District Central Banks in Madras?—Yes, I know that the Amraoti Central Bank has got a cash credit to the extent of 2 lakhs of rupees, but that is more on the security of Government paper that these banks hold.

29949. You are talking about subsidiary industries in answer to Question 17, section (*b*), and you suggest various spare-time occupations such as rope-making, basket-weaving, tailoring and so on. Do you think there is any caste prejudice against some of these spare-time occupations?—Not against those I have mentioned.

29950. You do not think there is any prejudice against rope-making?—None. As a matter of fact some better-class people, who have an idea of making money during their spare-time, do this work even to-day.

29951. Chicken farming is in a rather different position?—Yes. That would not be liked by Hindus.

29952. How many Co-operative Institutes are there at the moment?—There are at present two Divisional Institutes, one for Berar and another for the northern districts. There is also a common institute which is called the Central Provinces and Berar Federation. That serves the Central Provinces proper and Berar.

29953. The Board that you suggest should be set up to advise the Minister should consist of the Registrar of Co-operative Societies, the Director of Agriculture and two representatives, one from each Co-operative Institute, a representative of the Central Provinces Federation, a representative of the Provincial Bank, a representative of the Central Banks in Berar and a representative of all Central Banks in the Central Provinces. Do you think that would be a feasible proposal? Do you see any difficulty in these several persons meeting and getting together?—I do not think so. In fact, a Co-operative Committee of this type was attempted while the Hon'ble Sir S. M. Chitnavis was the Minister in charge of this department.

29954. On page 247 in your answer to the same Question 22 (*a*) (i), you say that it is desirable that Central Banks should be given the power of recommending suspensions and remissions of land revenue on the lines laid down by Government Do you think it is a wise thing to give to bodies who have no responsibility for the

collection of revenue the right of recommending remission?—The point in my mind was that these co-operative banks come in contact with the people in villages every day, and thus they get a more correct idea of the real state of the people; and they are not influenced by the same executive opinions as the Revenue authorities.

29955. On the other hand, they are not stimulated by the same financial demands, are they?—One might say that, of course.

29956. On page 247 in your answer to Question 22 (*a*) (ii), you say that the Berar Co-operative Institute finds it difficult to differentiate between paying and non-paying societies and works equally for all. What do you mean by that?—The situation is this. We expected every village society would voluntarily affiliate itself to the Institute, but we find in actual practice that out of 700 societies in Berar only 300 have enrolled and 400 are standing out. They think they do not stand to gain much, because the ordinary villager looks to an immediate gain rather than a distant profit. As, however, the Institute wants to spread education and propaganda, it works for all societies, whether they are affiliated or not.

29957. You mean between the affiliated and non-affiliated; that is the point?—Yes

29958. Then you make the very sound suggestion that the primary societies should hold meetings and say that if they can be taught to hold meetings and you take an annual stock of the pecuniary condition of the society as a whole and the economic betterment of every individual they would soon learn to imbibe the lesson of thrift and self-reliance How many of the primary societies with which you are familiar do in fact hold annual meetings?—At present very few hold annual meetings of the type I have in mind. The whole idea is that we must get them to hold annual meetings for the purposes of examining the condition of each individual member.

29959. So they run from one year's end to the next without any meetings at all?—Without general meetings. There are meetings of village societies when they have to apply for a loan, and they pass resolutions that they are prepared to advise the Central Bank to give a loan.

29960. Has that to be approved by a general meeting?—Not necessarily.

29961. Do you know any societies that have never had a general meeting?—No. Every society has a general meeting once a year, but not of the kind I am suggesting.

29962. It has one meeting a year?—Yes, to pass its accounts.

29963 Are they well attended as a general rule?—I think they are fairly well attended.

29964. *Mr. Calvert*: What do you mean by "fairly"?—I mean about 60 per cent of the members.

29965. *The Chairman*: On page 248, in your answer to Question 22 (*b*) (i), you say it is necessary to amend the Berar Land Revenue Code in such a way as to make sums due by members of co-operative societies under award recoverable as arrears of land revenue, and then over the page in paragraph (6) you say that in the Central Provinces and Berar, but more in the Central Provinces, it is necessary to amend the Insolvency Law in such a way as to make the dues of a society recoverable as a second charge after Government revenue, which is declared to be a first charge. Is there any material difference between the two proposals?—There is. The first is to amend the Berar Land Revenue Code, which is a provincial measure. The other is to amend the Insolvency Law, which is an All-India measure. This question was brought up in the All-India Registrars' Conference and was negatived, but the feeling is very strong indeed in the Central Provinces that the Insolvency Law ought to be amended. The Central Provinces and United Provinces members actually moved a resolution about it in the All-India Registrars' Conference, but the conference did not give its weight to that opinion, and the proposal was vetoed.

I see that your first proposal applies only to the Berar Land Revenue Code.

29966. Would you explain what exactly you mean by your answer to our Question 22 (*b*) (*i*), on page 249, paragraph (12)?—The proposal is to authorise Central Banks to use their money for purposes of financing purchase of cotton by big firms. In Berar what happens is that a firm like Ralli Bros. or the Japanese firms have got

their outlying agencies in small towns, where there are no branches of the Imperial Bank to give over cash on the day that it is required. For instance, at a place called Telhara, 28 miles away from Akola, there is no branch of the Imperial Bank. Money is required to be paid to the cultivators when these agents buy cotton. These agents have money in the shape of a draft on the Imperial Bank at Akola; but somebody is wanted to supply cash in way-side places. The Central Bank at Akola will be able to utilise its money for a short time for the purpose, and there is no danger because the money is covered by the draft on the Imperial Bank.

29967. Do you find that these Central Banks hold a good deal of cash?—In those months they do.

29968. Why do you prefer platform scales to beam scales?—Many of the frauds that we hear of are due to the use of beam scales. The beam scale has got two pans, one for the load and the other for the weight; the carts have to be weighed by several loads and when a quantity is weighed it is dumped in a heap of cotton. The weigher on behalf of the buyer or agent of the particular cotton grower goes on calling weight after weight in vernacular numbers, and very often the complaint is that they take jumps, that is to say from 21 they jump at once to 30 and so on. If a platform scale is used, there is no necessity of counting, because the whole of the cart can be weighed at once.

29969. Do you mean to say that they are a little optimistic in their addition? Is that it?—Yes.

29970 I suppose the platform scale is much harder to tamper with than a beam scale?—Yes, that is also true. My suggestion is that the cotton market committees should have control of these platform scales, because it is just possible that gains by dishonesty may induce people to tamper with the springs below; if the cotton market committee has control over it, there would be very little chance of that being done.

29971. In dealing with these selling societies, you say: "Facilities should be provided in these shops for advances of cash against goods up to a settled maximum, so as to prevent a needy farmer suffering by having to sell in a falling market". Is it your suggestion there that the farmer should hold in his house or that the society should hold in its godown?—The society should hold in its godown.

29972. At present they have got no storage at all?—No.

29973. They would have to pay for it?—Yes.

29974. You suggest that these shops must further be able to provide facilities for having cotton ginned before it is sold, as sometimes the prices offered for ginned cotton are proportionately greater than for unginned cotton?—Yes; that is what has been found to be profitable in the Bombay Presidency.

29975. Would not the cost of providing storage and a ginning plant mean a considerable increase in the capital requirements?—It would afford the agriculturist at least Rs. 10 more per cart.

29976. But, as far as their capital requirements go, it would seriously increase them? They would be required to pay both the godown charge and the ginning charge?—The godown charge would be extra, but the ginning charge would be *nil* because the ordinary purchaser has got to gin it.

29977. They would have to build storage accommodation and also to build a factory and set up a ginning machine?—It is possible, in Berar, to get factories on the leasehold system; many are working like that. You get a factory for a season by paying so many rupees. It is not necessary for a co-operative society or a shop to build a factory for itself in the early years of its extistence.

29978. What do you think of the proposal that the society should act as merchant should buy the cultivator's crop, should make the best of the marketing that they can and should then divide the profits according to the amount of cotton which each cultivator has handed in?—The trade in cotton is very risky; it depends on the Bombay rate, which is influenced by Lancashire.

29979. Let us see where your own suggestion leads you. You are going to have a large godown?—A fairly large one.

29980. And your members' cotton is going to be, some of it at the back, some near the entrance, some of it underneath the heap; who is going to decide which member's cotton is going to be sold?—The system that I have seen working in the southern part of the Bombay Presidency is that when the cotton arrives and the market is dull, the society decides upon its quality and its value according to the prices prevailing on that day. Then a ticket is issued to the man to say that he holds so much cotton of such and such a quality. The cotton is stored in different heaps of different quality and sold in heaps of different qualities. The cotton is thus graded and when it is sold the man gets the benefit of it. In this operation of grading an officer of the Agricultural Department assists.

29981. So that the man is really paid by an arrangement which gives him the equivalent of the value of his own cotton on the day that the sale is supposed to be effected, but in fact it is not his own cotton that is sold on that day?—Cotton of the same grade is lumped together and sold; he gets the advantage of a rising market, he need not rush his bargain through.

29982. Is much misunderstanding and bitterness apparent when, owing to some unexpected fall in the market, the cultivator does not get as good a price as he expected?—There is grumbling, naturally. They say that they have to pay the land revenue or meet the pressing demands of a *sowcar* or moneylender, and they have to sell at a disadvantage.

29983. Are these societies carrying on grading at the moment?—They are not.

29984. You suggest they should?—Yes.

29985. What do you say about the management of the Central Banks, in your experience, are you satisfied with it?—I am.

29986. You think it is good?—Yes.

29987. Who represents the cultivators on the bank?—The cultivators are all shareholders in the bank, and in the annual meeting they have got a direct vote on the working body or the managing committee. They elect the directors, and the Chairman is elected by the whole body. All the members of co-operative primary societies are shareholders, and each one of them has got a vote. They assemble in large numbers at the time of the meeting.

29988. The Commission has been given to understand that the individual applicants for loans, members of co-operative primary societies, have their applications examined not by their own primary society but by the Central Banks. What information is before the directorate of the Central Bank in examining particular applications?—In Berar the application is not examined by the Central Bank at all; it is merely scrutinised by them afterwards. The proposal is initiated by the society itself as a whole.

29989. So that, in Berar, primary societies show much more vigour than is the case with many societies in the Central Provinces?—Yes In fact it is our endeavour to see that they do it to perfection.

29990. Are you satisfied with the way in which they carry it out?—I am not absolutely satisfied, but I am not pessimistic on that point; they are doing fairly well

29991. Are they improving?—They are improving.

29992. Have you any suggestions to make, other than those set down in your note, for improving the machinery of the co-operative movement either in Berar or the Central Provinces?—No; I have tried to go into details in my note.

29993. Are you satisfied with the rate of interest which cultivators pay in obtaining their loans?—Considering the market rate of interest, I think, there is every reason to be satisfied.

29994. Do you think there might be any danger in fact in offering extremely cheap credit to the cultivators?—Cheap credit without proper supervision is of course dangerous; the whole structure of the co-operative movement is to see that that supervision is applied directly when the loan is asked for.

29995. Do you think that more agricultural propaganda and demonstration might be carried out through the agency of the co-operative societies?—I do.

29996. Do you think that the crop organisations would be willing to undertake that work?—They would be, and I hope the Agricultural Department will co-operate; I have no reason to think that the Agricultural Department is unwilling to co-operate.

29997. Do you think that the co-operative movement might well join the attempt to consolidate unduly fragmented holdings?—Yes.

29998. That is a work which you would like to see the co operative movement undertake?—That question does not arise in Berar.

29999. Are you familiar with the conditions in the Central Provinces?—Not much.

30000. Do you look forward to the day when spare-time occupations may be organised on a co-operative basis?—I do.

30001 How about the educative function of co-operation in Berar? Are you making any sustained attempt to educate individual members of primary societies in the principles of co-operation?—We have been doing it intensively for the past year.

30002. Is it showing good results?—Yes.

30003. Do you like the principle that the Central Banks should be, as it were, the overseers of the whole movement? Are you in favour of that principle?—For the time being I see no objection to it; if a better agency could be thought of, it would certainly be desirable That is why we are starting institutes which have not got the financial side of the movement to look to.

30004. Do you think there are many cases in which individual members of credit societies borrow ostensibly for productive purposes, but in fact apply the loan to non-productive purposes?—There are occasional instances like that, but I should not say that there are very many.

30005. Are there many cases where an individuul member of a society is turned out for practices of that sort?—I have not come across any instance of that kind.

30006. You have never known of a society turning a member out?—No.

30007. Have you ever known of any society turning out an individual member for any offence?—I have not come across any such instance.

30008. You told us at the beginning of your examination that you were Vice-Chairman of the District Board at Amraoti from 1916 to 1924. Is the District Board allowed by its rules to apply any of its funds to assist the co-operative movement?—No.

30009. Do you think that is sound?—Looking to the activities that the District Boards in Berar are called upon to discharge, I do not think they have got much funds left to assist the co-operative movement directly. They might occasionally give help which does not involve any expenditure, for instance, the use of their teachers as account writers and as supervisors of primary societies.

30010. When you were Vice-Chairman of the Board, was the Board sufficiently in funds to discharge its various responsibilities?—Leaving out communications, I think the Board was fairly in funds for discharging their other responsibilities.

30011. You could not manage the roads?—No, we could not manage the roads to my satisfaction for want of funds.

30012. Have the roads deteriorated since they have been placed in charge of District Boards?—In some places they have; but I should not say that the transference of roads to the District Councils has resulted in any deterioration as such.

30013. *The Raja of Parlakimedi*: You say some of the roads in Berar are not maintained in the same condition as they were before the District Councils took them over for lack of funds. Cannot the District Council levy a special cess for the maintenance of their roads?—They can; but the difficulty is taxation which is always unpleasant to anybody and when the Provincial Government itself is unwilling to do it, how can you ask the local bodies to do it? They are unwilling to do it.

30014. **Roads are an important factor for several needs, are they not?—They are; I firmly believe that if we improve all the roads we will increase the wealth of the agriculturists by at least 25 per cent; but the difficulty is to find the money.**

30015. *The Chairman*: For the capital charge or for maintenance?—For the capital charge; the interest charges can perhaps be met.

30016. *The Raja of Parlakimedi*: You mention that it is difficult to find labour for the maintenance of these roads?—Yes, in some tracts.

30017. You suggest there should be a law to enforce supply of labour?—What I really mean is this The village people should have a good r ad at any cost. A big man should pay down the money necessary to pay for the labour, or if he is not a big man he should exert himself on the road. What we find is that generally the main roads running by the village are in good condition, but the approaches for a mile or a mile and a half from the main road are in very bad condition; there are pits and other things and when there are floods the whole traffic is held up.

30018. Supply of labour by enactment of law would not be popular you think?—It would not be; but vaccination was also not popular.

30019. Such a thing has been tried in certain parts of India where it was impossible to get labour. When it was laid down that so many hands must be supplied from each village it was very much criticised in the Legislative Council?—We have also got to educate the members of the Council in that respect.

30020. *Sir James MacKenna*. At the foot of page 246 in answer to Question 22 *(a)* you suggest: "It is for Government to see that money is made available for agriculture when it is not wanted for commerce and this can be accomplished by enabling the Imperial Banks to place their money at the disposal of co-operative societies or by starting an All-India Co-operative State Apex Bank". Then you say: "An attempt made in this Province in this direction failed because it demanded too large a price from the Central Bank and societies". Could you amplify that a little? I would like to know something about that attempt?—The latter part of that answer refers to the crisis that arose in the Central Provinces in 1920 and Government came to the relief of the co-operative societies and gave 20 lakhs of rupees, 17 lakhs to be given to agriculturists or members of co-operative societies as loans, and 3 lakhs to serve as fluid resources for the benefit of depositors. The terms imposed were that the Registrar of Co operative Societies should determine, and he should be the sole authority for the purpose of determining to which of the societies these loans should be given; it was also suggested that all banks which got loans by these means should first exert themselves to collect money and apply it towards the repayment of this, irrespective of the obligations of the Central Bank in other respects; it was further suggested that the Registrar should be given special powers to remove Directors, etc. The non-official element, which is the chief element in the Central Provinces and Berar in the co-operative movement, naturally felt that this was a criticism of their work.

30021. That was what you meant by saying that the Government demanded too large a price?—It was not the supervision that was resented but the way in which the whole thing was attempted to be done. There was no objection to the supervision of the Registrar in general, as required by the Act, but the special supervision and the special powers and conditions that they wanted to lay down were considered not to be proper for the non-official people to work under.

30022. They resented the conditions imposed?—Yes.

30023. *Prof. Gangulee*: When was the Co-operative Institute in Berar started? And you have been the President since then?—At the end of 1922; Yes.

30024. Have you an institution undertaking any survey of the extent of rural indebtedness in Berar?—I have been trying to go round and visit the village societies and take survey of the economic condition of the societies as a whole.

30025. Into how many cases have you investigated so far?—I have investigated into the cases of 902 members comprising 35 villages and 57 societies.

30026. Did you do that work on behalf of the Institute or in your individual capacity?—As President of the Institute I did that.

30027. **Do you think that the indebtedness is increasing?**—I should think it is increasing.

30028. Could you give us an idea of the burden of the total debt per acre on an average?—My survey of these village societies so far leads me to the conclusion that for every rupee borrowed from the co-operative society, that is, from the Central Bank, the agriculturist is indebted to the outside creditor to the extent of one rupee That is, the outside indebtedness is equal to the indebtedness of the Co-operative Central Banks. At present the average indebtedness of a member in Berar is Rs. 600 and if you add another Rs. 600 to it as indebtedness due to outside creditors, it means that every member on an average is indebted to the extent of Rs 1,200. Now the average holding in Berar is 20 acres and that means there is an average indebtedness of Rs. 60 per acre.

30029. That is more than what Mr. Darling found in the Punjab?—I think Mr. Darling worked out the figures for the Province as a whole; my figures are for the co-operative societies only.

30030. What is the price of land here per acre?—It varies from Rs. 100 to Rs. 400; it depends upon the quality of the land and its proximity to the village.

30031 *The Raja of Parlakimedi*: The maximum price is Rs. 400?—Yes, occasionally garden land might go up to even Rs 500 an acre.

30032. That is for first class land, I suppose?—Yes. I am speaking of the prices of this year and last year. Of course prices are showing a tendency to drop.

30033. *Prof. Gangulee*: This investigation of yours was done in detail I suppose. Could you tell us what is the proportion of the debt to the assets of the family, on an average, in the cases you have investigated?—I have tried to do that. I tackled that problem by finding out in how many years an agriculturist with 20 acres will be able to repay without selling his estate, and I found that the majority of members would be able to pay all their debts in from seven to ten years, provided they were industrious enough and provided they laid by at least Rs. 8 per acre per annum.

30034. Is it your contention that co-operative credit societies are reducing the indebtedness of the village?—A good many members are trying to do that. But there are black sheep everywhere and these black sheep take some time to improve.

30035. But Berar is rather a prosperous tract?—I should think so.

30036 Is it your impression that within the last ten years the debt of the Berar peasantry has increased faster than that in the Central Provinces?—It has slightly increased because the people have been adopting a higher standard of life. They tried to have more comforts than their permanent income would allow.

30037. It proves, as Mr. Darling says, that debt follows credit?—In a way you might say that, but the increased indebtedness would not mean that the condition of the agriculturist is in any sense deplorable. What we have to see is the repaying capacity of the man.

30038. Have you been to the Punjab?—Yes, but only to the central Punjab and Lyallpur district.

30039. How is the movement there compared with that in Berar?—It is superior, and we have profited by the example of the Punjab; that is why I say that the Co-operative Department and the Government should help the non-officials and the societies by going round and seeing what other people are in a position to do.

30040. In answer to Question 5 (*a*), you suggest that all the resolutions adopted in the Conference of Registrars of Co-operative Societies held in Bombay in January 1926 should be given effect to. Did you attend the Conference yourself?—Yes.

30041. Did you approve of all the resolutions adopted by that Conference?—Yes; I think they were adopted after mature deliberation.

30042. With regard to the thrift societies that you propose to establish, have the co-operative societies in Berar, speaking generally, promoted thrift?—A good many members have learnt the lesson of thrift; but thrift is a virtue by itself and is a very difficult thing to practise. What I specially want by starting these societies is

to enlist the sympathy of the women folk in the movement. Mr. Calvert will tell you that in a village in the Punjab all the members of the society are women and, from the scavenger woman to the lady in charge of the dispensary, all are members.

30043. Has any beginning been made in that direction in Berar?—We are beginning now.

30044. How many societies have been formed?—We are just beginning; we had a ladies' conference in Akola and one of the resolutions they adopted was to start these thrift societies, consisting entirely of ladies and managed entirely by them.

30045. About this enforcement of the law of *damdopat*, did you not think that the Mahommedans would oppose such an Act? What I heard was that a measure of this nature was introduced in the Legislative Assembly by a Mahommedan gentleman some time ago. Some Mahommedans might be opposed to it, but a good Mahommedan in the sense of a Mahommedan who stands by his religion ought not to oppose it.

30046. What is your opinion of the Deccan Agriculturists' Relief Act?—The Deccan Agriculturists' Relief Act was an unnatural measure from the economic point of view, and it failed in its purpose If you have had the advantage of reading the report of the Committee which sat, consisting of a member from the High Court Bench and others from Bombay, you will know that they have declared that the object of the Act has been frustrated in actual practice, and they recommended the repeal of the Act. It was an attempt to legislate on a matter which it is very difficult to deal with by legislation. The methods of moneylenders are very complicated; it could not succeed.

30047. It will not function under normal conditions? No.

30048. What is your opinion of the Usurious Loans Act?—In actual practice it is very difficult to operate; it postulates proof of undue influence by the debtor to the satisfaction of the court. Undue influence, like fraud, is often very difficult of proof. Although in a particular case one feels inclined to think that undue influence has been practised, a civil court finds great difficulty going on mere moral proof. When undue influence is alleged the Judge has to decide on the evidence before him and the great difficulty in seeking the protection of the Usurious Loans Act, from the point of view of the debtor, is in regard to proof. I do not know how far public opinion will support me in this, but I think legislation making the law of *damdopat* of universal application would be better than the Usurious Loans Act.

30049. Can you tell us more about your activities with reference to the training of subordinate officers in the co-operative movement; what procedure do you follow in training these men?—The procedure we follow in the Institute is based on the Punjab model. When I visited the Punjab I found there a regular system of training these men, and retraining them from time to time on the various aspects of their work. We are maintaining classes in the Institute; we bring together people of various grades and mental calibre in different groups and hold classes for them, for instance, the account writers are put together in a separate class. The rural directors of banks are assembled together and are taught the elementary principles that they have to keep in mind when they visit societies. The members of the societies are assembled together in a different class. There is a class for the officers of the Central Banks, and we even had a class for the Government Auditors which was assisted by the Co-operative Department and run by the Institute.

30050. Do revenue officers attend classes?—No.

30051. Do *patels*, *patwaris* and such officers attend classes?—No. If they happen to be members of co-operative societies, for instance, as headmen of the society, they come in that capacity, but not as *patels* and *patwaris*.

30052. Have you translated any book on co-operation into the vernacular of the Province?—There are a number. Marathi is the vernacular language of that part of the country from which I come, and in that language the Act, the rules, and the principles of co-operation have been published in various forms in small pamphlets which we issue from time to time. We get them read; one of our great points is that we issue a monthly magazine in which we deal with various aspects of the the movement which arise; we deal with these matters in small notes and we see that those notes are read, or at any rate, explained by some member of the society.

R. B. K. V. BRAHMA.

30053. There has been a good deal of discussion as to the assistance that can be got from non-officials. Would you agree that the non-official assistance hitherto given has been rather spasmodic in character?—I think that is rather a strong word to use; of course, it is not as constant as the work of a whole-time paid man would be, but I should not call it spasmodic.

30054. Has it been lacking in certainty?—Yes, that is so. But, whatever the reasons may be, however silly those reasons may be, non-official advice is more likely to be listened to, and therefore non-official advice is valuable.

30055. Do you know of any non-official organisation as a corporate body helping the co-operative movement, such as the Servants of India Society in Bombay?—There is none in the Central Provinces.

30056. Have you any suggestion to make where by this co-operative movement could be made more attractive to the non-officials?—The only suggestion I should like to put forward is this. I have my own ideas on the point, and I have always advised the Central Banks to separate their finance activities from their educational and propaganda activities; the financial activities require constant attention, and naturally the managing board or the working committee are keen to see that money that is advanced is safe and is called in at the proper time; they have no time left to devote to education and propaganda. I am trying to advise members to set up education committees on which men could sit irrespective of whether they held a sufficient number of shares to enable them to become directors. Economics graduates have been coming into prominence in the movement lately, and if they were asked to go out into the villages and take an interest in the movement, I think they would do so.

30057. Do you think college students are taking an interest in the movement?—Yes, they are. Students from the King Edward College at Amraoti have assisted us in going out to villages and teaching the village people the advantages of thrift and of co-operative societies.

30058. You are all the time talking of the Berar co-operative societies?—Yes

30058-*a*. Have you any experience of the co-operative societies in the Central Provinces?—I have seen some of them, but I should not like to commit myself on a matter about which I do not know very much.

30059. You say your societies touch the lower strata of small agriculturists?—Yes.

30060. Is that your experience in Berar?—Yes. Of the 902 members that I saw I found that 400 were persons whose holdings were from 1 acre to 15 acres. I call them small holdings, they are really uneconomic holdings. I find there were 186 members whose holdings ranged from 16 to 30 acres. I call a holding of from 31 to 50 acres a large holding, it is not really a large holding, but it is large from the point of view of the people in Berar. I found there were 60 members whose holdings were between 51 and 100 acres. I found 33 members whose holdings were over 100 acres. I found 137 members who had no holding at all and yet were members of co-operative societies simply because they were regarded as good people who could be trusted with an advance of money in view of their exertions and character.

30061. In the Berar societies what is the method of recruiting Circle Auditors?—There is no special method in Berar; the department is one for the Central Provinces and Berar.

30062. What type of people are they?—They are recruited in the same way as all Government officers; there is no special qualification. In the Punjab special qualifications are put down. Mr. Calvert explained it to me when I was there. If the Central Provinces and Berar follow the same system, earlier and better results will be obtained.

30063. *Mr. Calvert*: In dealing with education, you say there is a general disinclination amongst teachers to do field work; you further say that you have not got teachers who can or will teach agriculture; and further you say that teachers feel no interest in nature study. Do you not think those three points are arguments in favour of drawing teachers from the rural classes?—Yes.

30064. And yet you are not convinced by your own arguments?—I would not insist on teachers being drawn from the rural classes, because there are other difficulties. A teacher drawn from the agricultural class has not the same cultural education as a teacher drawn from better class people; if an agriculturist who comes from the bottom strata of society is called upon to teach languages, his system of teaching Marathi, for instance, will be far less efficient than that of a teacher from a higher strata of society. I should not insist on the teachers being drawn from the agricultural classes, though I should like teachers to attend classes for six months to get the necessary qualifications to teach the rudiments of agricultural practice.

30065. Which do you think would be better in order to give a rural bias to education, to train teachers or to get teachers from the agricultural classes?—Of course a man bred up in a village will be able to do it much better, but the difficulty is to find out the right man to serve both purposes.

30066. Among the causes of borrowing, would you put the willingness of the moneylender to lend?—In a way I would; the willingness of the moneylender is sometimes a cause of indebtedness, but I should not regard it as a very great factor either in the existence of indebtedness or in the increase of it.

30067. But the moneylender is often willing to lend money on ordinary book credit without security?—I do not find that in Berar; in fact, in view of the insolvency law I have told people that they should not advance money on no security.

30068. I do not quite understand why a strong supporter of co-operation like yourself should advocate a non-co-operative village bank?—I am speaking of the agriculturist in general; we are not willing to force co-operation on people who are not prepared to accept the benefit of co-operation, and I think if we can make a provision of that kind, it may be possible for us to meet the needs of agriculturists, because many people are unwilling to accept the unlimited liability principle which is the basis of all our co-operative societies in Berar; there are people who stand out because they do not want to accept the principle of unlimited liability to which they are subject when they become members of a co-operative society.

30069. How would you have limited liability without the Companies Act?—I would merely try to do away with certain restrictions of the Indian Companies Act; I do not desire to abolish the Act as a whole. There are certain restrictions on banking companies, and I should like those principles to be slightly modified.

30070. They are very slight?—Not in actual practice; we find people do not want to start banks.

30071. The Companies Act is designed to facilitate the formation of companies?—It is, but with regard to banking there are certain restrictions; the Act was amended after the banking failures of 1913: the Government of India became overcautious in that matter.

30072. But your village banks would have to be audited?—Yes.

30073. They would have to keep accounts?—Yes.

30074. They would have to publish a list of members?—Yes.

30075. Would it be a body corporate?—Yes, it would be a body corporate otherwise it would not be able to sue, and it would have to institute suits.

30076. And you would have to have provisions for liquidation?—Yes.

30077. So that you would have to have the main provisions of the Companies Act?—Yes, but I am specially referring to the provisions with regard to banking, which require a certain minimum number of members and certain forms of responsibility of directors which are in excess of the requirements of ordinary companies.

30078. The Companies Act has only two provisions as regards banks: it require a six monthly statement of accounts?—In a particular form.

30079. And it requires the names of all managers to be published; those are the only special provisions relating to banks in the Companies Act?—And there is a provision as to the minimum number of members.

30080. Seven?—I think for banking there have to be twenty.

30081. You are thinking of section 4 with regard to prohibition of trading?—Yes.

30082. That would be the general law of the land still, would it not?—Yes, it is the general law of the land; I am suggesting that merely as a measure which may be tried in certain cases.

30083. You suggest fixing a maximum rate of interest; under what penalty would you enforce that?—The penalty would be that any interest which went beyond 3 per cent would not be decreed by a civil court; it would be regarded as a contract which was void and unenforceable at law.

30084. Among your sources of credit, is there the wandering cattle dealer; does he sell cattle on credit?—Occasionally, but not much in Berar.

30085. There is no such system in Berar?—No.

30086. Does the village jeweller do pawnbroking?—Yes, some of them do.

30087. Would you be in favour of a legislative measure insisting upon money-lenders keeping accurate accounts on paged books?—I should have no objection to that.

30088. And in readable script?—Yes, I have no objection, but as a matter of fact in Berar they have to do it because they have got to prove it in a court of law. Readable script may mean Marwari script also which Marwaris only would be able to read. But if the idea is that there should be a common script then I think that there will be some difficulty about it.

30089. On the question of arbitration, you again suggest an alternative to the co-operative method. Is that due to lack of faith in co-operative societies?—No; but there are no arbitration societies such as you have in the Punjab. My point is that societies like those should be established and started here. At any rate, an arbitrator should be appointed by the Registrar to relieve him of the duty of giving awards, which duty I am told is increasing very much.

30090. You say that the Registrar should be an Indian. Is that opinion inspired by the sad memory of your visit to the Punjab?—Mr. Calvert is more Indian than an Indian himself. He knows the conditions of Indians better than they know them. When I came back to Berar I told people that Mr. Calvert was a missionary and that the success of the co-operative movement was due entirely to him.

30091. In suggesting that Government should assist land mortgage banks, is it your idea that they should guarantee the interest on debentures?—Yes, to a certain extent at the beginning of the movement.

30092. We have had actually before us two alterantive suggestions: one is that Government should invest in debentures and the other that they should guarantee interest on debentures Which do you think would be advisable?—That would vary from Province to Province. In the Central Provinces and Berar, it would be difficult for Government to raise necessary capital from the sale of debentures locally.

30093. You have no experience as to what the effect would be of a Government guarantee on debenture?—No.

30094. Do I understand that your Central Banks or Provincial Banks have found no difficulty in getting the Imperial Bank to discount their paper?—In fact they are not willing to do it. We tried to discount it in the beginning of the movement but they felt that they were prevented by law from discounting our paper. What they do is to take hold of our promissory notes and give money against them. They advance more on the security of the Government Promissory Notes that we hold.

30095. You ascribe the weakness of the primary societies in the Central Provinces and Berar to the neglect of education?—Yes.

30096. Do you think that the situation could be much relieved by a system of education of members. Is this what you are aiming at now?—Yes.

30097. Does your auditor not hold a general meeting of the society after the annual audit and explain the whole finance to the members?—I do not think that he does.

30098. Have you in Berar any societies amongst village menials of landless labourers?—No.

R. B. K. V. BRAHMA.

30099. Would you like the societies to be permitted to spend up to one-fifth of the annual profit for certain necessary objects? We were told yesterday that they already spend about 40 per cent for an audit and 15 per cent for the Institute, and another 20 per cent would leave very little for reserve funds?—They pay 15 per cent of their profits to the Berar Institute.

30100. And a certain amount to the audit fund?—I do not think that they pay anything to the audit fund. In Berar the societies which are members of the Institute are called upon to pay 15 per cent; societies which do their own writing up of accounts are given back 7½ per cent. My point is to allow the societies to feel that they have got the power over their money for very necessary objects. In villages the difficulty is that there is no common place for holding meetings, unless the meetings are held in the houses of *sirpanches* or other members. If they cannot rent a house, the Registrar should allow that. I have spoken to the Registrar myself and I think that he is favourably inclined in that direction.

30101. I have usually found a tree for this purpose?—It is not very easy usually, to hold a meeting under a tree because in some villages you will not find a single shady tree except the *Acacia Indica*.

30102. After you have put your faith on education for the improvement of primary societies, you go on to propose that the Land Revenue Code be amended in order to make the sums due by members recoverable?—Yes, I have proposed that as an *ad interim* measure. I am trying to advocate that merely as an encouragement to the movement during its infancy.

30103. You will still rely on education for your main support?—Yes.

30104. Have you any recollection of the new Bombay Co-operative Societies Act?—I have casually gone through it.

30105. They have allowed the first claim to the landlord and to land revenue. Subject to those two claims they have given the society the first charge on the assets of the member. Does that meet your wishes?—I think so, it will go a long way in that direction.

30106. Do you find any difficulty in this Province about your awards being executed in civil courts. Do civil courts delay proceedings at all?—No. The only difficulty we find in actual practice is that of selling land. The present circular of the Judicial Commissioner lays down that the auctions of these lands are to take place at certain stated places in a taluka, and that circular leaves the discretion to the courts to have the auction done at the village, and instances have been brought to my notice where the selling of land at a place different from where it is situated has resulted in some loss to the member. We are trying to get that circular slightly modified. Beyond that I do not think that the civil courts have stood in our way.

30107. Have you really had to auction lands to recover debts?—Occasionally.

30108. *Mr. Kamat*: In answer to one of the questions you say, I should insist that a teacher should have gone through a course of agricultural education before he was confirmed in his appointment. Would you insist upon that in the case of all the trained teachers as well?—I have put it rather too broadly, I think. I would not insist on it in the case of every teacher, but there may be a selected grade of teachers for instance who should be called upon to go through this education and serve on village schools wherever started.

30109. It would not be quite a feasible proposition to insist on every teacher being sent for agricultural training, would it?—No; probably it would be beyond the competence of the Local Government to do that at present.

30110. Talking about demonstration and propaganda you say, on page 242 in answer to Question 3 (*c*), "That advice given by experts" (I presume of the Agricultural Department), "must be demonstrated to be beneficial: But what often happens is tha the advice to be followed either requires large expenditure or does not give certain results. Taking works on contracts and doing them cheaply is the surest way of convincing agriculturists." Would you kindly amplify that?—For instance, take the tractor plough which we are told does the work more economically. What we want the Agricultural Department to do is to take on contract, say, 100 acres in a village and actually do the work at a cost which would be much less than would be the case if

the agriculturist did it in his own way. If that were done, there would be no difficulty. In fact I was so sanguine about it that I actually offered the proposition to a certain responsible gentleman of the department. I said that I would carry out tractor ploughing on a dozen acres and I put down the money in advance, but the offer was not accepted. The real difficulty about these innovations, so far as the agriculturists are concerned, is that they are disinclined to go in for improved methods until they are satisfied that they are really going to be cheaper to them.

30111. Do you mean to say that your offer was not accepted by the Agricultural Department? I did not extend a challenge to any expert or other officer of the Agricultural Department. I thought that by telling a responsible officer of the department some good might result from it. But as I say there is a good deal of unwillingness displayed in this matter.

30112. Did that have a very bad effect on the agriculturists?—No; there are some agriculturists who do the work cheaper by this method. Big landlords and other people find ploughing by tractor much cheaper than the ordinary method of ploughing. What I do say is that you must demonstrate the new methods to the agriculturist and show him that they are cheaper than his old methods, and where this has been demonstrated the agriculturist has readily adopted them. For instance, the iron plough is a common feature in Berar now, it was not known five or seven years ago. The disc harrow is another instance.

30113. Has that been adopted to the needs or interests of the agriculturists in this part of the country? Or are the people using the ordinary standard ploughs? Has there been any change in the design so as to suit their special needs?—They are using those ploughs which by experience have been found to be best suited for instance, ploughs manufactured by Burn & Co. and Kirloskar Brothers have been adopted, and there are no complaints about them.

30114. Speaking about co-operation you throw out a suggestion that there should be co-operative societies for curtailing ceremonial expenditure on social customs, etc. These are to be in addition to your thrift societies?—Yes; I saw some societies in the Punjab which aim at this and I saw some societies which incorporate restrictions on expenditure in their byelaws.

30115. You gave certain replies to Mr. Calvert about your suggestion for the formation of village banks and exemption from the Indian Companies Act. I am sure you remember the Indian Companies Act was stiffened after the bank failures during the crisis of 1913. The object of stiffening it was to provide closer supervision and certain strict conditions. You want to go behind that?—That is why I limited the capital to Rs. 25,000.

30116. Even then for a village bank Rs. 25,000 is not a small amount. Do you think the village people would lose that money?—No, nor do I apprehend its loss because it will be under them directly and the supervision will be very strict. As the people would be living in the villages, they would know where the money was going to and they would not speculate.

30117. Speaking of the restriction on the maximum rate of interest to be charged by moneylenders and the law of *damdopat*, you suggest that 36 per cent per annum should be the maximum rate of interest. Do you not think that that is a very high rate?—It is; but considering that the rate of interest goes up sometimes to as much as 75 per cent or even more at the rate of one anna per rupee per day, I thought that my suggestion would be welcome and would not be criticised as being too hard upon even the very small moneylender.

30118. If 36 per cent were to be accepted, what will happen is that in three years the amount will be doubled, including the interest, and the man will go to court to exact the amount so that the debtor will have to pay this very high interest?—What I suggest is not that 36 per cent should be the ruling interest but anything exceeding 36 per cent should be declared null and void. I do not think a provision of the law which said that any contract which contained a demand for interest higher than 36 per cent would be regarded as void would have a bad effect.

30119. With regard to economic enquiries as to primary societies, did you visit the societies personally?—Yes. I visited 57 societies situated in 35 villages in the four districts of Berar.

30120. Was that during your spare time?—Yes, and occasionally also at the sacrifice of my own work, though I should not say that.

30121. You speak of the Taluka Development Associations in Bombay and you wish something like that to be established in Berar. Is it not the case that you have here Agricultural Associations in the district, in the taluka and in the tahsils and also lower down?—There are Agricultural Associations, but their activities are confined to a very narrow sphere and many of the associations are not really working.

30122. If your existing machinery is not working well, do you think there will be any advantage in copying the Bombay model?—The advantage, I am told, of the Bombay type is that the Co-operative and Agricultural Departments combine and the Taluka Development Associations take up the work of both.

30123. Do you suggest that they shou'd be under the guidance of the District Officer?—Yes, I would welcome that idea.

30124. You think the presence of the District Officers at these meetings would stimulate the non-official members and secure their more regular attendance?—I do not think so. I do not think the non-official members will attend merely because of the presence of District Officers.

30125. Then what is the advantage of the guidance of the District Officers?—The advantage is that the District Officers are touring officers and when they tour in the villages they get into touch with the people more closely and they will be able to give advice. That is why I say we want sympathetic District Officers not merely to dictate but to help and guide.

30126. While talking about the cotton sale societies, you say that *adtyas* should maintain a register showing the rate they have secured for each cart sold to the buyer. Will you explain what the process is here, and what part the *adtyas* play in securing good rates as commission agents for the seller?—What happens is this. In the market in the morning the *adtya* gets, say, 100 clients who bring him 200 carts. He has thus 200 carts to dispose of, and there are 5 or 10 big merchants willing to buy. Then he negotiates the rate with the purchaser or his agent. If the purchaser is not present in person (and the Ralli Company's agents are not always present in person) his agent or nominee is in the market. He sees the quality of the cotton and then quotes a certain rate, and if the agent of the cotton grower, *viz.*, the *adtya*, is not satisfied he says that this is not a proper rate, that the quality is higher, the lint percentage larger, and so on, and he asks for a better price. Some sort of bargaining goes on and the rate is settled. What happens then is that they begin to weigh the cotton and part of the cotton is tipped out of the carts on the heap of the purchaser and then, when the cart is, say, half empty, purchaser takes objection to the quality and says when he quoted his price it was for a better quality that the cotton turns out to be. He says he is not willing to pay the rate he quoted in the morning and that he wants a discount. Naturally the cart being half empty and the cotton thrown on the heap it is very difficult for the cotton grower to take it back again, so he is forced to abide by the wish of the purchaser, with the result that the cotton grower is not able to get fair price for the time. What happens there in the evening is that the *adtya* goes to the offices of the cotton buyers and says "I am receiving a great many complaints from my clients They say they are not receiveing a fair price." Thereupon some sort of compromise is arrived at at night. They say to the *adtya* "We quoted you 85 on an average for 100 carts; we will give you 90." The difficulty is that the *adtya* pays the money in advance and has given the price for each cotton cart from his shop soon after the cotton is weighed, for as soon as it is weighed the grower goes to the shop of the *adtya* and receives his money, and then goes back to his village. When the *adtya* recovers his money, either that night or next morning the difficulty is to distribute it among all his clients. He cannot do it, so he picks out the men who have howled most the previous day and who he thinks are his canvassers and satisfies them.

30127. Is there no method of finding out the fraud and giving the correct price to the grower from the debit the agent makes in his books in the evening? The books of Ralli Brothers will show the actual amount they have paid?—They do, but the difficulty is that the cotton grower cannot examine the books of Ralli Brothers. I do not think the books of Ralli Brothers would be open for inspection by these villagers, and in any case, each cotton grower cannot go and compel them to show him their register.

R. B. K. V. BRAHMA.

30128. While talking about general education, you say that local bodies are unwilling to enforce the provisions of the law with reference to compulsory primary education. Is that your experience ?—Yes.

30129. Who is standing in the way now so far as the introduction of compulsory primary education is concerned, the local bodies?—I would rather say the Local Government.

30130. Surely not ?—Yes, by enacting the laws they have.

30131. Will you please explain that further ? How is it the Local Government is responsible and not the local bodies ?—What the local Act requires in this Province is that before compulsory education is extended to any village the local authority or the local body has to make an application and the local authority or the local body has to satisfy Government as to the feasibility of the scheme and they have to make out elaborate calculations as regards the number of students, the accommodation and the quota the local body is able to give. All that takes at least six months and, education being unpopular in the villages, objections are raised in the villages, because the scheme is published for criticism. If strong objections are raised in a particular village, the local body asks leave to take back their proposal and the whole scheme falls through. On other occasions, when the proposal goes to the Local Government, difficulties are raised that the accommodation provided is not sufficient, and that the District Board or Council will have to pay a larger quota, and in calculating that strict care is taken to extract the full pound of flesh from the District Council. I do not mean to make any aspersion on the Education Department, but in making calculations on the financial side of the question great care is taken that charges which are debitable to compulsory education on the strictest calculations and considerations are put down. What I want is if education is to be made compulsory in every village, local bodies should only be asked to contribute a certain portion towards it which they can afford to do out of their own funds and Government should compel villages to go in for the scheme. If that were done, compulsory primary education would spread much faster.

30132. *Sir Thomas Middleton* : You refer to the reckless leasing of lands. Is the practice of leasing lands a very common one in Berar ?—Yes, very common.

30133. You talk of co-operative societies containing a number of persons who are not landowners ? Are most of them tenants of lands? —No. They are generally labourers in the fields. A person who has no land of his own is rarely given land on lease, because the landlord wants some security for his money.

30134. You think a considerable number of people who take land on lease in Berar do not become members of your co-operative societies and are not assisted by them?—No. Our co-operative societies are very small. For instance, their membership extends from 10 upwards, and the maximum that I have come across in Berar is 50.

30135. You refer to the increasing use of cowdung as fuel in Berar. I understand you have been in the Punjab and I also understand that in the Punjab the practice is to use cotton stalks as fuel to a large extent ?—Cotton stalks are also used as fuel in Berar.

30136. I am told that in the Punjab they do not burn cowdung in many areas because they use cotton stalks ?—If the Punjab is not doing it, then they are showing more sense. What I find is that cowdung is used to a large extent in brick kilns. My impression is that they could just as well use other kinds of fuel. In the brick kilns they burn cowdung because it is cheap. Every man looks at his own occupation solely from an economic point of view ; he does not care whether agriculture benefits or not.

30137. In answer to Question 17, you give a detailed estimate of the time that a labourer or cultivator wastes?—As spare time.

30138. How did you get those figures ?—By observation and by enquiry. I have been going into the villages, and I know at what hour they go out into the fields and at what hour they return. Of course I do not say that it is accurate to a point, but it is largely correct.

30139. Have you made enquiries about this from others?—I have made enquiries from the cultivators themselves. In fact, one of the subjects that is going to be discussed at the Co-operative Conference, which is to be held on the 22nd and 23rd of this month, is this question of spare-time occupations.

30140. In answer to Question 22, you give us the rates which your banks charge on money lent; have your terms much reduced the rates of interest that were formerly current?—Yes. In fact, the influence of the co-operative movement has gone to this extent that in every village where there is a co-operative society in existence, the moneylender is not prepared to quote a higher rate of interest lest his client would become a member of the co-operative society.

30141. Do you regard that as one of the most useful functions of your society?—I think so.

30142. Reducing the general rate of interest?—That is not our aim, it is an advantage.

30143. In answer to Question 22, you say that if these co-operative shops for selling cotton are to stand in competition with the existing *adtyas*, there must be some change in the system?—Yes.

30144. I do not quite understand what that means. Do you mean that the *adtya* is offering to sell at a lower rate of commission than your shops charge and then makes a profit by falsifying the weight?—No; no doubt the profits of the *adtya* consist on occasions of these false weighments that he has done, but that is not the only thing. The second thing in the large amount of undistributed money that he gets from the purchaser. As I explained to Mr. Kamat, he gets a certain amount of money from the purchaser but he does not distribute it among the people who have brought in cotton carts. He has got an extra sum with him which he distributes out in doles for encouraging canvassers to get him new custom. That is not really his amount; it is the amount of each cart owner who has brought cotton, which should really go to him. This undistributed money is the *adtya*'s gain and with that money in his hands he has naturally got an advantage. For instance, he can say to the cart owner: "If you go to the shop controlled by the co-operative society you will only get Rs. 84, but I am prepared to give you Rs. 85 or Rs. 86, if you come over to my shop" and the money which he pays comes from the fund he has accumulated by these means.

30145. In answer to the question on general education, you say that parents often complain loudly that education in primary schools unfits children for work in the fields. Do you think that that is a just criticism, that it unfits them, or is the parent complaining that their time is occupied?—It is not a just criticism, but that is the criticism; it is a fact that there is a general disinclination, on the part of these village boys to go to their own fields; that is a thing which I have observed myself.

30146. Then it is a just criticism from the parent's point of view?—Yes; the remedy lies in giving an agricultural bias to the boy, and in teaching him the dignity of labour.

30147. Is there compulsory education in any district in Berar?—In every district there are some villages where there is compulsion. For instance, in Amraoti there are 10 villages where compulsion has been introduced.

30148. How is school attendance enforced?—There is a fine of Rs. 2. There is an attendance committee which looks after the attendance of boys; if a boy has absented himself and the reasons are not satisfactory, a prosecution is launched against the parent and he is fined an amount not exceeding Rs. 2.

30149. Is that method found to be satisfactory with all classes?—As a matter of fact, that method has not been put into actual practice. There are not many such cases, because the District Board is also trying to feel its way as to how far education should really be made compulsory.

30150. *Dr. Hyder*: With regard to this question of middle-class youths and agriculture, do you not think that these boys who come out of high schools and colleges would be too soft-handed to like agriculture?—Yes, if the present ways of education are continued, they would be.

30151. You say that agriculture should be taught without being tiresome?—What I really mean is that if they are taken out into the fields, then there is some kind of diversion to them. If it is merely taught in the school room it becomes tiresome. Nature study on a school table is hardly nature study. Agriculture explained by books, diagrams and blackboards is no agricultural instruction at all

30152. Do you not think that publicity is a great factor in everything?—It should be.

30153 Here your proposal is that the village banks should be exempted from the operation of the Indian Companies Act. You want to do away with the system of submission of statements of accounts?—I do not object to that. I am only suggesting that there should be no strict enforcement of particular forms which are insisted upon in the case of the larger banks.

30154. What are the privileges which village banks would obtain if they were given this exemption?—It would merely be an exemption from filling up certain forms, and they would be free from rigid compulsion in certain matters.

30155. Exemption from the Indian Companies Act?—And from certain rules framed the by Local Government prescribing certain forms.

30156. You are not in favour of the abolition of returns?—I do not object to the statements being published

30157. With regard to the question of implements, you say that they could be popularised if steps were taken by Government to do so by the help of the Agricultural Department. Do you really think there is great scope for the use of such machinery?—I think so. Speaking for Berar there is scope for it. Take the winnowing machine and chaff-cutter for instance An agriculturist in the interior finds that his time is wasted when there is no wind to separate the chaff from the corn; the winnowing machine will be of great help to him, and with the aid of the chaff-cutter his fodder supplies will increase.

30158. If these machines become popular, the question of means arises. Supposing the cost of the machinery is not within the means of the cultivators, what measures would you suggest in order that these mechanical appliances may be taken up by the agriculturists?—My suggestion is that they should unite themselves into co-operative societies for the purpose of purchasing these machines, and lease them out. I have seen a village where they have purchased an iron plough in the same way; it did not cost them more than Rs. 50, and they are now leasing it out at certain rates per day.

30159. You think there would be work enough for a set of people who own these tractors and chaff-cutting machines?—Yes.

30160. Even if they were conducted for private profit?—Yes.

30161. Such kinds of things are used in other countries; do you think it is possible for the small peasants here?—Yes.

30162. You want to make village life more attractive by increasing amusements. What do you include under amusements?—I would include magic lantern shows, cinemas and gramophones.

30163. On what do the mill hands spend their earnings?—I cannot tell you, because I have not got much experience of mill hands; there are very few mills in Berar.

30164. *Mr. Wills*: As regards the working of the law of *damdopat* in Berar, it is not an absolute limit, that is to say, it applies every time the accounts are made up; is that correct?—It is applied every time that a suit is instituted.

30165. Supposing a creditor and debtor come to an agreement and write a fresh bond, it applies again?—No.

30166. It applies on the original basis?—On the new basis, that is the ruling of the Bombay High Court, which I consider a retrograde step.

30167. The result is that the creditor is in a powerful position; he is able to get his bond renewed, so that in actual fact the interest would be many times in excess?—It should be enacted that in cases like this the real cash advance in the first instance should be considered.

30168. Would you recommend an amendment of the law, or the extension of the present law to other parts of India?—I would advocate the passing of a new law altogether.

30169. *Mr. Kamat*: On this question of cowdung fuel and making of bricks, are not ashes thrown out in the neighbourhood of railway engine sheds by the railway engines? That naturally, if utilised, would save a great deal of the cowdung?—Not much. In places where the carting of the ashes is expensive, it would not pay them.

(The witness withdrew.)

The Commission then adjourned till 10 *a.m. on Saturday, the 22nd January*, 1927.

Saturday, January 22nd, 1927.

NAGPUR.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E., C.B.

Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.

Sir JAMES MACKENNA, KT., C.I.E., I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO of PARLAKIMEDI.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT,

Mr. C. U. WILLS, I.C S.
Sir SHANKAR MADHO CHITNAVIS, Kt., I.S.O. } (*Co-opted Members*).

Mr. J. A. MADAN, I.C S.
Mr F. W. H. SMITH. } (*Joint Secretaries*).

Mr. D. O. WITT, Chief Conservator of Forests, Central Provinces.

Note on the Relations of Forestry to Agriculture.

1. *Methods of working the forest and the preparation of working plans.*—When a new working plan is prepared for a Forest Division, the local agricultural population is chiefly affected by the allocation of the coupes to be felled in successive years and by the consequent closures to grazing. It is a primary duty of the Working Plans Officer to arrange his coupes and consequent grazing closures in such a way that the local population shall enjoy adequate and reasonable grazing facilities. While almost, all grazing is more or less harmful to the forest, it is recognised that it is the duty of the Forest Department to assist agriculture by the provision of reasonable grazing facilities, and the prescriptions of every working plan give effect to this principle. The successive annual coupes are therefore arranged in such a way that in each year an approximately equal area of forest and an area equally conveniently situated is made available for the grazing of each group of villages adjoining the forest. Strictly sylvicultural requirements are in fact frequently sacrificed or subordinated to the needs or customs of the local agricultural population and in order to ensure that the grazing prescriptions of a new working plan are reasonably liberal and convenient and are likely to cause no discontent or hardship, these prescriptions do not receive administrative sanction until they have been carefully investigated and reported upon by a Settlement Officer appointed by the Revenue Department. This officer, in company with the Working Plans Officer, tours throughout the area likely to be affected by the provisions of the working plan: he calls for the villagers who enjoy grazing or other privileges in the forest and to them he fully explains the proposals of the Working Plans Officer. He hears their point of view and any objections they may wish to raise to the grazing closures proposed, and it is his duty to reconcile, as far as possible, their demands with the sylvicultural requirements of the forest, as laid down by the Working Plans Officer. He also satisfies himself that the grazing rates, whether privilege, ordinary, or commercial, proposed by the Working Plans Officer, are not unreasonably high when compared with the means of the local agricultural population and the rates which they have been accustomed to pay in the past.

It is likewise the duty of the Settlement Officer to ascertain that the annual coupes are so situated that the local demand for firewood or building material can be satisfied and that the coupes are in no year unreasonably remote or difficult of approach. By the appointment of a Settlement Officer the Local Government thus makes adequate provision to supply the needs of the local agricultural population both as regards grazing and as regards fuel and other forest products.

2. *Fixation of grazing rates.*—The rules governing the fixation of grazing rates are printed as Appendix XIV of the Central Provinces Forest Manual. The principle underlying these rules is that every genuine cultivator shall be allowed to graze four cattle for each working plough at merely nominal rates, known as privilege rates. The privilege rate varies from 1 anna in Mandla to 3 annas in parts of Nagpur Division. Thus the ordinary poor cultivator, owning one plough of land and less than five cattle, is only called upon to pay 4 annas to 12 annas for grazing for his cattle for the whole year, or approximately one day's pay. If he is slightly more prosperous and owns more than four cattle or if he owns a buffalo, he is charged ordinary rates for this excess. Ordinary rates are fixed at about three or four times privilege rates and an agriculturist is permitted to graze at these rates a number equal to the number which he is permitted to graze at privilege rates.

Any cattle in excess of those permitted to graze at privilege or ordinary rates must be paid for at commercial rates which are fixed at approximately the real commercial value of the produce removed from the forest.

From this it will be seen that while the poor cultivator is allowed grazing at rates which are purely nominal, the more well-to-do tenant is called upon to pay for his excess cattle on a sliding scale in proportion to his means and to the size of his herds.

It is here necessary to point out that notwithstanding the general rise in prices since the War, the grazing rates have as yet hardly anywhere been enhanced and that where such enhancement has taken place it has been very small and hardly in proportion to the increases prescribed in new Land Revenue Settlements. Thus, in the South-Raipur Sal Forest Working Plan, the privilege rate was increased only from 1 anna 6 pies to 2 annas. It may be contended that an increase of 25 per cent is sufficiently severe, but when it is realised that this increase means that the poor cultivator, owning one plough of land, will only have to pay 2 annas more (or half a day's work) for the grazing of all his cattle for one year, then it will be agreed that the grazing enhancement has erred rather on the side of moderation than of excess especially when compared with the much heavier enhancement proposed in the Revenue Settlement which is now under consideration.

The result of charging merely nominal rates for agricultural cattle is a very considerable monetary concession which amounted on the average to Rs. 10,74,500 per annum for the last five years.

3. *The number of cattle grazing in the Central Provinces forests.*—The following figures show the number of cattle grazed in Government forest during the last three years and the revenue realised from the sale of grazing licenses :—

Year.	Number of cattle grazed.	Amount of revenue realised.
		Rs.
1922-23	3,131,898	11,91,851
1923-24	3,388,833	12,93,384
1924-25	3,526,527	13,97,526

The increase of 400,000 cattle and Rs. 2 lakhs of revenue, which followed on a corresponding decrease in the years immediately preceding, is due to a succession of favourable rainy seasons and a consequent increased prosperity of the agricultural population of the Central Provinces.

NOTE.—In the five years' period 1914 to 1919, there had been a decrease in the number of cattle grazed from 3,956,717 in 1914-15 to 3,244,709 in 1918-19. In 1919-20 the number grazed was 3,203,759.

The reduction may be attributed to—

(1) Heavy mortality of cattle in 1917 and 1918.

(2) Cattle owners resorting to private forests where there are no restrictions.

(3) Dearness of grain and other necessities of life, coupled with scarcity of fodder in 1918-19, which induced people to dispose of many of their surplus cattle.

The Forest Department is being continually pressed mainly by short-sighted politicians to still further increased grazing facilities.

The fallacy of a policy of unrestricted grazing has been clearly recognised by Government and the Agricultural Department as may be seen by a perusal of paragraph 6 of Government Resolution on the Report on Forest Administration for the year 1924-25, which reads as follows:—

"At the request of the Local Government, the Board of Agriculture considered the rival merits of the Government policy of the limitation of the number of cattle to be admitted and of unrestricted grazing subject to a fee and the Board gave its unequivocal support to the former. The admission of unlimited numbers of cattle would be as detrimental to the cattle as to the forest and in the interest of both, the existing restrictions must be retained."

That the existing restrictions are far from severe may readily be understood from a perusal of the figures given above, which show that in the last three years there was an increase of nearly 400,000 or about 12 per cent in the numbers of cattle that grazed in Government forest. If it be acknowledged that the cattle owned in 1922 were already at least sufficient in numbers for the cultivators' needs, then a policy of increased restrictions, not of their relaxation, is clearly indicated in the best interest of the agricultural population.

The following figures show the areas closed and open to grazing in the Government forests of the Central Provinces during the year 1924-25. From these figures it will be seen that the closures are so arranged that approximately 1/5th is always closed and 4/5th of the total area is always open to the grazing of buffaloes, cows and bullocks:—

Area closed to grazing	...	3,382 sq. miles.
Area open to all animals	...	4,326 ,,
Area open to all animals except browsers (*i.e.*, camels, sheep and goats)	...	11,877 ,,

When it is remembered that in some Provinces, *e.g.*, Bihar and Orissa, no cattle are permitted to graze in any A class reserve, the extent to which the Central Provinces Government has gone in providing grazing facilities is obvious.

Experiments in the supply of baled grass for stall-feeding—As a result of a Conference held in 1909, orders were issued to Conservators in 1910 to undertake experiments for the supply of baled grass from various forest divisions in their circles in order to encourage the stall-feeding of cattle by the local agricultural population. The result of these experiments are given in Chief Conservator's letter No. C-87, dated the 14th January 1914. He wrote as follows:—

"Since 1910 endeavours have been made to induce agriculturists to resort to stall-feeding and to purchase baled grass pressed by the Forest Department, but practically no success has been attained and often the baled grass that has been stored has had to be written off in succeeding years, or disposed of at a loss."

In corroboration of his report, the Chief Conservator drew attention to previous correspondence or action in the matter. Thus, the Conservators' Conference of 1911 wrote:—"It does not appear that there is much chance of

inducing agriculturists to purchase baled grass except in years of short rainfall." The Board of Forestry, held at Dehra Dun in March 1913, definitely advocated a policy of "cheap grass and dear grazing" and pointed out that the villager is not likely to take generally to stall-feeding until higher graizng fees are imposed.

The following details regarding grass baling operations in various forest divisions during the year 1912-13 will indicate the lack of success attained by these experiments (*vide* Report on Forest Administration for 1912-13, paragraphs 200—204).

Damoh.—195 bales, average weight 2½ maunds, of selected grass were prepared. To encourage sales, 59 bales were despatched to various important villages, but though the grass had been specially selected by the Deputy Director of Agriculture and was offered at cost price, *viz.*, Re. 0-8-3, only 9 bales could be sold. 71 tons in all were baled; of this quantity, only 4½ tons were sold to agriculturists and 62½ tons to other purchasers. The total cost of the operations was Rs 595, and the resulting revenue, Rs. 635, making no allowance for cost of establishment.

Saugor.—403 bales, average weight 1½ maunds, were prepared and offered for sale at 12 annas per bale, being widely advertised by the Deputy Commissioner through the Revenue Staff. By the end of June, only 153 bales had been sold although the price was lowered to 9 annas, and subsequently to 6 annas per bale. 250 bales remained unsold and had to be written off. Of 22 tons cut and baled, only 2 tons were sold to agriculturists and 5 tons to other purchasers.

Hoshangabad.—581 bales were prepared at a cost of Rs 519, but only 189 bales were sold, resulting in a revenue of Rs. 271.

Similar losses were incurred in Nimar, Akola and elsewhere, but the results in North-Chanda, Nagpur-Wardha and Yeotmal were more promising, though the largest sales were made in the towns and not to agriculturists. In the Berar Circle it was reported that "In no district there appears any great keenness on the part of agriculturists to obtain baled grass for stall-feeding".

Until such time as the agriculturist can be educated to see the advantages of stall-feeding over grazing it is not possible for the Forest Department to do more than it has done.

4. *The sale of fodder and thatching grass from closed coupes*.—By the sale of grass in closed coupes and in grass *birs*, the Forest Department does all in its power to encourage stall-feeding and thus to diminish the damage done to the forest by the grazing of excessive herds of cattle. Unfortunately, except in a few districts of the Province, e.g., Nimar, stall-feeding is little practised with the result that in most Divisions the sale of fodder grass is very small. On the other hand, there is a heavy demand for thatching grass which is mostly cut and removed after it has become unfit for fodder. To try and stimulate the demand for fodder grass the Forest Department charges lower rates for grass cut up to the end of December, but this concession has little or no effect on sales of fodder grass.

Recently Government had under consideration the agency for the sale of grass in closed coupes. It was feared that the sale of grass *birs* to contractors might prove a hardship to purchasers who would have to pay contractors for cutting the grass and in addition would pay the contractor's profit. Investigations, however, proved that in many areas the purchasers prefer to buy grass ready cut by contractors even in Divisions where equally conveniently situated coupes are set apart for the sale of grass at lower rates on the license system. In some Divisions, on the other hand, purchasers prefer to cut the grass themselves.

As a result of these investigations, the Local Government decided that no hard and fast rules could be laid down for the Province as a whole for the agency to be adopted for the disposal of grass in *birs* or closed coupes so as to ensure the supply of cheap grass to cultivators. Accordingly, it has been decided to permit the use of both the license and the auction systems. The Divisional Forest Officer discusses with the Deputy Commissioner the arrangements proposed before grass in closed coupes is auctioned, the general wishes of the local population being duly considered.

5. *Methods for the supply of fuel and other produce to cultivators. Nistar and Paidawar.*—Certain prescribed villages, usually such as form enclaves within Government forest or are situated in districts where the demand on the forests is almost wholly confined to the demands of the village, are permitted to commute for *Nistar* and *Paidawar*; by commutation is meant the payment of a fixed sum every year by each household in the village for the privilege of removing from the forest, at any time during the year and as often as is necessary, certain stated description of produce for *bona fide* home consumption and not for barter or sale or wasteful use. The commutation system is only suitable where there is little commercial demand for forest produce; elsewhere, such a system is liable to abuse.

Nistar is usually taken to include dry fuel, bamboos, grass, thorns, leaves and fibres, while *Paidawar* means all edible roots, fruits, flowers and gums.

The more useful method of sale of these products to cultivators is by the license system, *i.e.*, a license is purchased from a license vendor which entitles the purchaser to remove the specified produce from the forest. Special low rates are fixed for each district for such produce as is taken by *bona fide* agriculturist. Dry firewood is generally taken from any area most suitable to the purchaser, while timber and larger quantities of fuel are purchased at somewhat higher rates in the annual coupes under working. These annual coupes are distributed according to the prescriptions of a working plan in such a way as to supply, as conveniently as possible, the local demand in every agricultural area adjoining the forest. These coupes are usually auctioned to contractors who fell the produce and sell to purchasers, but the system of departmental working of coupes is now becoming more widely adopted. Such a system ensures the proper sylvicultural working of coupes, it gives a larger revenue to the Forest Department by eliminating the middle-man's profits and by decreasing the possibility of illicit fellings, and it provides a salutary check on the rates at which produce is sold to cultivators.

In the Chhattisgarh plain, attempts have been made by the Forest Department to encourage the use of firewood as fuel as opposed to cowdung by the establishment of fuel depôts at suitable agricultural centres. The experiment has unfortunately not proved a success and it has been found necessary to shut down two out of four depôts after incurring a heavy loss. The resolution of Government on the Forest Administration Report for 1918-19 may be quoted in this connection—

"It must be admitted that the results so far have not been encouraging, and they afford a curious comment on the allegation sometimes made that the burning of cowdung as fuel is entirely necessitated by the lack of firewood. If the people of the Raipur district continue to burn cowdung, with 160,000 cubic feet of firewood stacked almost at their doors and offered to them at very cheap rates, immemorial custom and a preference for cowdung fuel must be assigned as the reasons for the continuance of the practice, rather than the scarcity of wood fuel."

The value of free grant of major produce in 1924-25 amounted to Rs. 52,834 and of minor produce to Rs. 1,63,915. In case of famine or scarcity, special free grants of grass, edible products, bamboos, etc., are made and payment of the usual grazing fees either postponed or entirely remitted.

6. *Extraction of minor forest produce, lac, etc.*—It is the policy of the Forest Department to carry out the propagation and cultivation of lac within Government forest as a purely departmental operation, employing labour chiefly of forest villages, to carry out the work. The Forest Department is always ready to purchase brood lac from cultivators at suitable rates and to encourage them in this way to propagate lac, but it is no longer the policy of the Forest Department to form out lac trees to contractors or to permit outside cultivators to grow lac in Government forest, results in the past having nearly always been unsatisfactory.

During the open season, when agricultural work is more or less at a standstill, many cultivators find suitable employment in the forest in collecting *harra, mohwa* or *tendu* leaves; similarly, in famine years, the various fruits and flowers of the forest, such as *tendu, mohwa* and *achar*, afford valuable means of sustenance to the local population.

7. *The construction of roads and wells, etc.*—The progressive policy adopted by the Forest Department in the construction of forest roads is sufficiently illustrated by the following figures:—

Expenditure on the construction of new forest roads.

Year.	Mileage.	Cost.	*Loan Fund Roads.*	
		Rs.	Mileage.	Cost in rupees.
1915-16 ...	244	17,499		
1916-17 ...	175	49,033		
1917-18 ...	212	48,410		
1918-19 ...	170	63,869		
1919-20 ..	163	65,948		
1920-21 ...	236	73,429		
1921-22 ..	445	19,538		
1922-23 ...	142	46,825	38	17,658
1923-24 ..	166	50,777	126	37,078
1924-25 ..	193	38,811	41	26,608

The construction of forest roads, while enhancing forest revenues, at the same time affords continually increasing facilities to the agricultural population for the removal of produce from the forest. Many of the roads, too, are not merely useful for the exploitation of forest produce, but by improving the general system of communications in a district they prove of inestimable benefit to the local population for the carting of their agricultural produce. Many agricultural areas which were previously remote and of low rentable value have become far more accessible and prosperous entirely through the activities of the Forest Department in the construction of new roads and it has frequently been suggested that the policy of debiting entirely to forest funds the expenditure on many forest roads which are equally useful to the general public for the exploitation of agricultural produce is a policy which might equitably be revised. The Divisional Forest Officer is very often more intimately acquainted than any one else with the needs of the agricultural population adjoining his tract of forest in the matter of road construction and it has been very wisely advocated that the Deputy Commissioner should consult the forest officer regarding the general policy of road development to be adopted in such tracts.

It may be added that local labour obtains abundant employment in the construction of forest roads, more especially in famine years when a special Famine Road Programme is brought into operation.

The repair and construction of wells, tanks and anicuts along forest roads or in grazing areas are works of public utility and add to the comfort of grazing cattle and of travellers. There are many roads by which it would be impossible to travel in the hot season, but for the provision of wells by the Forest Department, the expenditure incurred under this head in 1924-25 was Rs. 25,854, a considerable increase over previous years.

8. *Forest areas available for cultivation.*—When the forests were first reserved, many areas, particularly on the outskirts of the forest, were included, which were subsequently found to be more suitable for cultivation. Many such areas have since been excised from Government forest and formed into ryotwari villages; but this process has now probably reached completion and few, if any, areas remain for excision. Culturable areas within Government forest are now usually formed into forest villages with the object of increasing the supply of labour available for forest operations.

Replies to the Questionnaire.

QUESTION 19.—FORESTS.—(*a*) The forests of the Central Provinces and Berar are being worked primarily for the benefit of the agricultural population. The manner in which this is done is clearly explained in paragraph 1 of my note on "The Relations of Forestry to Agriculture" (page 271 above).

The needs of agriculture are put first, and when necessary forest land is given up for agriculture.

The following figures show the extent to which during the last twenty years the forest area has been reduced for purposes of cultivation:—

	Total forest area.	Loss in forest area.
	Sq. miles.	Sq. miles.
1906-07	22,002	...
1916-17	19,672	2,330
1925-26	19,503	169
Total ...	...	2,499

Every effort is made to give the agriculturist all the grazing he requires. It must be admitted that this is the most difficult problem in the Central Provinces as regards forest conservancy. The tendency is to demand more and more grazing at the expense of the forests, while the Forest Department has to see that the facilities afforded are compatible with the proper preservation of the forest. It is difficult to prove to those interested that a certain area is being overgrazed. It is more apparent to the eye of the trained forester than it is to the outsider. The opinion I hold is that consistent with the proper preservation of the forests, the agriculturist is being given the maximum grazing facilities that can be made available. The following figures give some idea of the total facilities for grazing, but it should be pointed out that generalisations from the totals are not altogether justified, because there are certain areas which owing to remoteness from cultivated areas are hardly grazed at all, whereas on other areas the grazing demand is excessive. There is an economic limit beyond which cattle cannot go for grazing.

Areas open to grazing.

	Sq. miles.
1916-17 ...	16,155
1925-26 ...	16,347

Number of cattle grazed.

1916-17 ...	3,581,780
1925-26 ...	3,526,621

With these figures may be compared the grazing facilities afforded in Bombay and Madras Presidencies.

	Forest area. Sq. miles.	No. of cattle grazed.
Bombay ...	14,970	2,438,889
Madras ...	19,128	2,235,069

The remedy for excessive grazing is of course stall-feeding. The cutting of grass and supply of fodder in place of grazing is the only possible and correct remedy.

Reference may be made to paragraph 3 of my note which gives full details of the attempts made by Government to provide cheap fodder and the small response made by the agriculturist. What I should like to see is a policy of dear grazing and cheap fodder. The present system of cheap grazing is not in the true interests of the agriculturist because he thereby keeps old and useless cattle which eat up the grass which should be reserved for the good cattle. It

should further be noted that the average annual value of grazing concessions in the Central Provinces for the last five years has amounted to Rs. 10,74,500. Paragraph 2 of my note deals with the actual rates charged for grazing.

(*b*) There is in my opinion no scarcity of firewood or fodder except in Berar. Paragraph 5 my of note fully explains the facilities for the supply of firewood. Special note should be made of the attempts to get the inhabitants of the Chhattisgarh plains to use fuel instead of cowdung for cooking, etc., and the comment of the Local Administration in the Annual Report for 1918-19. These facts speak for themselves.

In Berar the best method of increasing the supply of fuel would be to increase the areas of *babul bans* worked by the Forest Department under an agri-sylvicultural system. The demand for cultivation, however, is so great that the tendency is rather to reduce these areas and put them under permanent cultivation.

As regards fodder, enormous areas go to waste each year in the forests in those areas closed to grazing for sylvicultural reasons, usually after felling. Grass is available at cheap rates from these areas, but with certain notable exceptions it is not much sought after. Reference may be made to paragraph 3 of my note on "Experiments in the supply of baled grass for stall-feeding" in this respect.

A very notable exception is the district of Nimar where fodder grass is extensively cut and removed from Government forest for stall-feeding.

Incidentally the Nimar cattle are amongst the best in the Province.

(*c*) So far it cannot be said that forests in the Central Provinces have deteriorated to such an extent as to lead to soil erosion of a serious nature. Drought has had more to do with forest deterioration than anything else.

Overgrazing in some areas has resulted in deterioration of forest, but so long as Government realise the necessity of control of grazing and that there is a limit beyond which we cannot safely go without endangering the existence of the forest, I do not anticipate any serious damage.

I do not consider that floods that have occurred in the Central Provinces have been due to deterioration of forests. They have been due to unprecedented falls of rain against which no precautions were possible.

(*d*) The proportion of forest area to culturable area in the Central Provinces is ample and afforestation is not called for.

As indicated under (*c*), soil erosion is not a calamity in the Central Provinces.

A rule exists and has existed for years forbidding the felling of trees within 20 yards of either bank of a stream which ordinarily retains water until January in all malguzari areas. This rule aids in preventing destruction by erosion of agricultural land.

(*e*) Only as regards *babul bans* in Berar.

(*f*) The Central Provinces forests as a whole cannot be said to be suffering from excessive grazing. There are, however, certain tracts, *e.g.*, in Nagpur, Wardha and Yeotmal, where pressure of grazing is very severe. In such cases grazing settlements limiting the number of cattle that may be admitted have been made. In the Northern Forest Divisions of the Provinces no such settlements have been made. They are now needed and are being taken in hand with the preparation of new working plans.

The problem in the Central Provinces is to effect a more equable distribution of the grazing pressure over the available pasture grounds.

Soil erosion is undoubtedly facilitated by excessive grazing, but so long as the grazing is controlled and kept within limits, permanent deterioration of the forests can be avoided. The remedies for excessive grazing in the Central Provinces are—

(1) Grazing settlements limiting the total amount of grazing and aiming at better distribution.

(2) Higher grazing rates which would cause the agriculturist to keep less useless cattle and incidentally benefit the better cattle.

(3) Low rates for fodder grass (already in force) which combined with high grazing rates would induce the people to go in for stall-feeding.

Oral Evidence.

30170. *The Chairman:* Mr. Witt, you are Chief Conservator of Forests in the Central Provinces?—Yes.

30171. We have the notes of the evidence which you wish to give. Would you like to make any general statement at this stage?—No.

30172. You have given us a very complete note of the fashion in which you attempt to reconcile the sometimes conflicting interests of forestry and agriculture and I have only one or two questions to ask you. Have you any shifting cultivation in the Province?—Very little; it is so small that it is quite negligible. We used to have it but it has gradually been stopped.

30173. If the policy of cutting and preserving fodder on a large scale in the forest areas is to be undertaken, would you suggest that the Forest Department should do it or the Agricultural Department?—I think the Forest Department could do it. We carried out very big fodder operations during the War.

30174. Could you carry that out with the present staff?—No, we should probably have to take on certain additional staff if it is to be a regular thing. We have got very good centres for it and it was even under consideration whether we should not have permanent steam baling presses in the Nimar district south of Khandwa, which is the best centre for it. That project was finally abandoned because we found that, except in really serious famine years, there was no sufficient demand. We have tried at different times to adopt this baling and supply of fodder but it has never given us any results worth having at all.

30175. Has it been regarded as a form of insurance against a fodder famine?—Yes, I should say it has. I know it has been suggested that funds should be put at our disposal for these purposes. That has not been done but, as occasion arose, we have been asked to carry out certain works. Last year we were suddenly asked to supply Berar and the orders went backwards and forwards. It was first wanted, then it was not wanted, and again it was wanted, and finally we prepared this grass and in the end Berar did not take it and we had to sell it locally.

30176. At a loss?—It just about covered the expenses.

30177. As a reasonable scheme do you not think that two years' hay should be kept in storage and that all the hay should be sold in the third year for what it would fetch?—The trouble would be to store the fodder. We should require very excellent and expensive sheds in which to preserve it and we should have to see that it was stacked carefully. All that would make it very costly.

30178. You think that you could not undertake to keep it more than one year?—No.

30179. By what period in the year does it become evident that there is going to be a fodder famine?—You can usually tell by about October or November, but not before. Then of course that is just about the latest time for them to start cutting their grass.

30180. The very latest?—Yes.

30181. So that you cannot wait until you have a warning before you make your hay?—No.

30182. Meantime, is there no fodder reserve at all in your hands?—Cut and baled?

30183. Yes?—Not cut and baled. We do not keep any in stock.

30184. It is your view, I understand from your note, that, consistent with the reasonable requirements of sylviculture, you are giving the cultivators all that you can in the direction of facilities for grazing and grass cutting?—Yes.

30185. How about fuel?—I prepared a small note on that, especially on the supply of fuel where people largely use cowdung. We tried it a year or two ago in Raipur; we took 27,000 maunds of fuel out 20 miles from the forest and dumped it right in the middle of the plain.

30186. And in the middle of the villages?—Yes; that was in 1920. By the end of 1924 had only sold 18,000 maunds which realised an average rate of 4 annas a maund. There was a tremendous lot of wastage and in the end we lost Rs. 4,040 on the transaction.

30187. Do you consider the price at which you supplied this fuel to be reasonable?—It is reasonable that they should pay a little higher price for fuel which we had carted such a long distance. Some of them prefer to fetch it from the jungle themselves.

30188. Is it true that you, in attempting an experiment of that sort, are in conflict with habit as much as you are in conflict with the economics of the situation?—Yes, I quite agree. I put it down more to the difficulty of overcoming the habit of using cowdung than to anything else.

30189. So that both propaganda and patience are necessary?—Yes.

30190. Was the experiment repeated?—We closed this depôt down altogether because there was a certain loss.

30191. Was there any propaganda either by your own department or by the Department of Agriculture?—Not that I know of, except that we advertised it. The people round about knew that we were doing it; there was no special propaganda work.

30192. Probably a little more persistence and propaganda would be required to make it a success?—Yes, I think we should be prepared to lose money on it for several years to come.

30193. I understand from your note that you do your best to provide fuel for those cultivators who are prepared to carry it themselves?—Yes, we have not only a system of daily licenses, but where there are big centres and forests, we have a monthly ticket and the men can go in every day and pick up dry fuel.

30194. What does it cost them?—Very little, I think I am afraid I have not got the figures with me, but I do not think that it is much more than a rupee per month; that means head loads only

30195. Have you different licences for larger loads?—Yes, different rates for head-loads, cattle-loads, and cart loads. The average price of a head load is about 6 pies.

30196. Do you think it would be to the advantage of the cultivator to lower the rates for grazing?—I suppose it would be a great advantage to him if he could get his grazing for nothing.

30197 It would be attractive to the cultivator, but do you not think it might encourage him to keep a greater number of inefficient cattle?—I am sure it would.

30198. And to that extent probably a reasonable charge is, in the long run, in the interests of the cultivator?—Yes, as a matter of fact we feel our grazing rates are unreasonably low.

30199. What are the rules about goats grazing in the forests?—We do not allow any goats or sheep in any "A" class reserve. Our forests are divided into "A" class and "B" class reserves. "A" class forests are forests which we imagine will always be retained as forests. The forests classified as "B" class are those which are set aside for eventual cultivation. When there is a demand then lands are taken up for ryotwari cultivation. In "B" class forests we allow goats and sheep, but not in "A" class forests.

30200. Have you any panchayat-controlled forests in this Province?—No.

30201. Are you familiar with the experiments which have been made in certain other Provinces?—No, I have not come in contact with them.

30202. Does work in the forest provide the forest tribes engaged principally upon cultivation with a certain amount of spare-time occupation?—Yes; we get a very large proportion of our labour from our so-called forest villages. We have villages in our forest reserves where we allow these people to settle and that is our mainstay for labour.

30203. You give these people a certain amount of land for cultivation?—Yes, we allow them certain concessions such as free grazing and we supply them with fuel and small timber.

30204. Do you give the land to them in ryotwari rights?—No; a forest villager is a tenant-at-will with us. If he does not abide by the rules framed for him we can turn him out at once.

30205. So that he is really there as a forester encouraged to build his house and he is given certain privileges in the way of cultivating a small piece of land, but he is really kept there for supplying labour to the Forest Department?—Yes; we do not like them to have too much land. The average amount of land we give each man is 10 to 20 acres We call it a plough or two ploughs of land.

30206. Have you calculated at all how much time they can give you if they cultivate 10 acres and do it properly?—No; we have not made any calculation in that way, but we find that in most villages we get all the labour we require.

30207. It looks as though a man cultivating 10 acres has a considerable amount of spare time on his hands?—Yes.

30208. Is land reasonably well cultivated in the forest villages?—Some of it is very poorly cultivated.

30209. Is it all dry cultivation?—Yes.

30210 Do you not encourage the *bunding* of a stream or anything like that?—I do not think we have got anything of that sort. In a few places where there is rice cultivation they may have a small village tank which they make use of but there is practically no irrigation cultivation at all.

30211. Are you satisfied that there is sufficiently complete touch between your department and the Agricultural Department?—Yes, I should say so, distinctly.

30212. How often do you meet the Director of Agriculture?—There is no special time for it, but whenever any special problems come up we communicate with each other. For instance, we discuss cattle farms and things like that.

30213. Is it your view that something more should be done to instruct the junior members of your service in the agricultural aspects of forestry? Does it occur to you, for instance, that a short period of attachment to the Agricultural Department in suitable districts might be very helpful?—No, I have not thought of it. I think every forest officer's training takes in very much the point of view that the first thing he has to see is the connection of the forest with the local people; that is one of the first things they are taught: that we have not merely to make a commercial success of it, but we have got to supply the requirements of the people first and at the same time of course preserve the forests. When forest officials are trained, this question is always taken up very considerably.

30214 Possibly that particular aspect of the matter is a tradition in this Province?—I think so. The requirements of the people is the first consideration.

30215. Do you often hear complaints from the cultivators?—The only complaint we hear is that there is never enough grazing, that is all.

30216. Are you controlling the lac industry in this Province? We have a lac industry in this Province, particularly in two Divisions.

30217. You have given us a note on the point. What exactly are the conditions under which this industry is carried on? Is it a village industry proper?—No, it is more from the forests.

30218. But it is carried on by the villagers independently, is it not?—To a certain extent, but nothing like the extent to which it is done in Bihar and Orissa. I have been there and I found the lac industry in villages was really a very big thing. Here it has been taken up a bit more during the high prices of lac by villagers and there are great possibilities in it, especially in the so-called *palas* lac which is in large quantitites in village areas. I think they could do a great deal more in that respect than they do at present.

30219. You say that the policy of the Forest Department is to carry out the propagation and cultivation of lac within Government forests as a purely departmental operation, employing labour chiefly of forest villages to carry out the work. You do not think that it can be done by private enterprise?—Yes it used to be done. We used to give contracts for the propagation of lac, but it was very unsatisfactory. It was done most unscientifically. Since we have learned something more about it, we have taken it up departmentally, and we carry it out ourselves with better results.

30220. So that the whole industry is now carried on departmentally?—Yes, but only in the Government forests.

30221. Then who is in charge of the lac industry in forests other than Government forests?—That is entirely in the hands of the malguzars or the headmen of the villages.

30222. I saw the lac factory at Rewa. I was told that the Rewa lac was sold at a premium. Is there any reason why the lac of the Central Provinces should not fetch as good a price as the Rewa lac?—No, none that I know.

30223. Does it?—We find that our prices entirely depend on Calcutta prices, we can fairly well gauge at what rate we can sell our lac according to the Calcutta prices at the time.

30224. But Rewa lac apparently gets the market price *plus* a premium?—We have no factories; all ours is sold by auction to contractors who export it mostly to Calcutta.

30225. Then it is a fact that villagers carrying on lac industries in the forests other than in the Government forests are not being watched or encouraged by any department?—No.

30226. Is there any sericulture in the Province?—Nothing worth speaking of. There used to be a little in Chanda, in our forests there small areas used to be taken up, but the revenue from it is absolutely negligible.

30227. Is it capable of development, do you think?—I suppose it is to a certain extent, but I really do not know very much about it.

30228. Do you know which department is responsible for sericulture in this Province?—No I know we lease out small areas in places like Chanda, but I should think the Department of Industries is responsible.

30229. Does the local worm feed on mulberries?—No, we have not got that kind. It is a different kind; it feeds on the tree *terminalia tomentosa*. In the "B" class forests we lease out areas of from 5 to 10 acres They are allowed in those areas to lop the branches, and so on. We would not allow it in "A" class forests.

30230. Would it do any harm in the "A" class forests?—It would be very difficult to control this lopping and hacking of the trees It does not matter in "B" class which is ultimately going under cultivation. They would lop the branches, take the leaves, etc

30231. *Sir Henry Lawrence*: Do you get *terminalia tomentosa* growing together in large areas?—It is mixed, but you do get areas where there is a sufficient quantity of this kind of tree to enable them to deal with it.

30232. On page 274 of these notes you mention that you closed down the experiment of selling fuel owing to the loss. I think I understood you to say that the loss was Rs. 4,000 over four years?—Yes.

30233. Is that the total loss that you suffered from this experiment?—Yes, Rs. 4,400. The total expenditure was Rs. 8,400; the total Revenue was Rs. 3,990; the loss to Government was Rs. 4,410, and all the fuel had gone of course.

30234. You speak in your note of incurring a heavy loss. Would that loss be Rs. 1,000 a year over a period of four years, or something more?—That would be Rs. 1,000 a year.

30235. It is not a very big sum to spend in introducing a new custom amongst an illiterate population?—No, I agree it is not very much.

30236. It might be worth while to continue the experiment for a longer period at a somewhat heavier public expenditure, might it not?—Yes, I think there is a good deal to be said for that. Unfortunately the Forest Department is expected to produce a higher revenue and in the anxiety to produce a higher revenue we rather try to cut our losses.

30237. Actually you make a revenue for the State of 20 lakhs of rupees or more net every year, do you not?—Yes, something like that has been the average for the last few years.

30238. I find also 30 or 35 lakhs of rupees revenue; is that the normal figure?—No, 20 lakhs has been the highest surplus. As far back as 1915-16 it was 15 lakhs;

in the succeeding years it was 16, 16, 14; 21 lakhs in 1919-20; then 16, 14, 16½, 20, 20 and now in 1925-26 we are not so well off because it is a poor agricultural year and that immediately affects our revenue. Our biggest supplies are our local supplies, and as soon as you get bad cotton or other crops the revenue suffers.

30239. Then from your point of view it would be quite reasonable to allow you to have a larger expenditure and not press you to produce a larger surplus?—I certainly think so. The Central Provinces now comes fourth in the list of net revenue in the whole of India. Only Burma, the United Provinces and Bombay produce higher revenues. When we produce 20 lakhs surplus, a huge Province like Madras produces only five lakhs surplus.

30240. Then you think you should be allowed a freer hand to spend money on useful projects?—Yes, I am prepared to say that.

30241. You have three grazing rates: the privilege rate from 1 to 2 annas the ordinary rate three or four times that, and then the commercial rate. What is your commercial rate?—The commercial rate is almost entirely made use of for buffaloes which are kept by certain classes of people in considerable numbers for the supply of *ghi*.

30242. What is the amount of it?—A good buffalo, I should think, can return to the owner in a year at least Rs. 100 net.

30243. I ask what is the amount of the rate you charge for such grazing?—From Re. 1 to Rs. 2 a year

30244. A good many years ago the Forestry Board decided that the policy as to forests should be cheap fodder and dear grazing?—Yes

30245. Do you think you have arrived at that in the Central Provinces?—No, I do not think so.

30246. Do you think it is the best policy in the interests of the country?—I think it is. I am sure it will lead to less of these useless cattle being kept

30247. How do you hope to arrive at this ideal policy?—We should have to put up the grazing rates in the first instance. We have quite a big supply of fodder; a large amount of grass goes to waste every year. We have large supplies of fodder owing to areas that were closed to grazing, after working over, being available for cutting and removal of grass, those areas are either sold to contractors or opened to cutting by the people. The question came up a little while ago; there, were complaints that the contractors who bought these grass *birs* by auction sold grass at rates which were too high. What we found was that in many cases people preferred to come to the area, find grass there cut and stacked, pay a little more and take it away. In other places they preferred to go themselves, cut the grass and take it away We usually sell these grass *birs* about August when it is more or less known what the state of the grazing is going to be. The Forest Divisional Officer is supposed to consult the Deputy Commissioner as to which areas should be opened for cutting by license, that is to say, that the cultivator should go in himself and take it, and which areas we could reasonably put up to auction for a contractor to buy and do the cutting and selling himself. The cultivators are given every opportunity to decide whether they would like to cut it themselves or whether they would like to have it done by contractors Our general experience is that they prefer the contractor, because he gets in his labour, cuts and stacks the stuff, and they find the stacks waiting for them. In areas where they can cut for themselves, they always come so late that it is no good; their agricultural work will not let them come sooner, and that is the case in the whole of the Province except in one district. In Khandwa, in the Nimar district, where I was 20 years ago, all the cultivators used to come in in October and November and cut their grass (we allowed them to do that), and they stacked it there until they were ready to take it out when they had more time, in December or January or later, and there they have got some of the finest cattle in the Province

30248. Do you think there will be much opposition to any progress in this direction of cheap fodder and dear grazing?—I am afraid there will be.

30249. Is any propaganda being attempted to teach the people that this is the right policy?—Not more than by offering them the areas, so that they can come in and cut the grass; we have not advertised the fact very largely.

30250. Are changes in your grazing rates subjected to the vote of the Legislative Council? Does it come before them in any form at all?—No. I think not; the Forest Department have been urging Government to raise the rates for grazing, but the Council refused to take it up It is one of the most difficult things to do, it would lead to agitation at once. The members continue to bring forward questions as to why there is not more grazing.

30251. The Council do not appreciate the problem of how far that is possible?—Not at all.

30252. And something ought to be done to instruct them?—Yes.

30253. *Sir Ganga Ram*: What kind of trees have you in your forests?—The two main trees in the Central Provinces are the teak tree which supplies all the timber for constructional purposes and the *sal* tree which supplies all the sleepers to the railways.

30254. Have you any works here to supply sleepers?—In the last two years, we have started large departmental operations for *sal* sleeper supply to the railway, we have now built a tramway in Raipur 60 miles long, which taps these *sal* forests and we shall now be able to bring out larger quantities at cheaper rates to Raipur.

30255. When you say tramway, you mean a light railway?—Yes.

30256. How is it worked; by horses?—It is a steam tramway.

30257. What gauge?—It is 2 ft. gauge.

30258. When you say that you are making Rs. 20 lakhs a year, is that from old forests or from such forests as you have grown in your time?—It is entirely self-grown forests.

30259. How much revenue do you get from those which are grown through the exertions of the Forest Department?—We do not depend on plantation forests; they are of what we call natural generation. We depend on the seed which falls to the ground; we do carry out certain operations which assist the seedling in getting a hold of the ground and coming up, and not being crowded out by more inferior trees. We have a few plantations in the Province, but it is nothing very much.

30260. If you allowed cultivators to cut and take away the grass in your 'A' class forests, would it matter very much?—We should be only too pleased if they were to do so, the grass interferes very much with the seedlings

30261 Have you given them the opportunity?—We always make that offer.

30262. They will not take it?—In a few places they take it, but there are very large areas untouched every year; in many of these places we burn the grass to get rid of it.

30263. If you baled the grass departmentally and kept it, do you not think that you could sell it?—We have tried it in several cases, but we find that there is no demand for it.

30264. Are your forests situated in places where railway facilities exist?—In the Nimar district, there is a place called Mandwa; that is the place where we had the largest operations during the War for fodder. We had the grass cut and baled and put on the railway there, ready to send it to Berar but at the last minute they said they did not want it; they said that the Nimar grass was no good, and we finally sold it locally.

30265. What did you tie these bales with?—With wires; that was hand-baled grass.

30266. How many bales could be put into a railway wagon?—Of course, with hand-baled grass you cannot get a large quantity in a wagon.

30267. What was the cost per bale?—There are some figures on page 274 of my note, for Damoh and Saugor. The bales were 2½ maunds for Damoh and 1½ maunds for Saugor, and we offered them at 12 annas; we reduced the rate to 9 annas and subsequently to 6 annas.

30268. What is the cost of baling only?—I do not think I have got the figures for that.

30269. Can you give a very big supply of sleepers to the railways, as much as they demand, or do they have to import from the Punjab and other places?—We do not supply everything, but there are large State forests which supply sleepers in the Central Provinces.

30270. Can you supply their full demand, or is the demand met by importing from outside places?—The demand is much greater than we can supply.

30271. You could not widen your operations so as to meet the full demand?—Not without encroaching on the Working Plans of the forest. We have got a Working Plan which allows us to cut so much a year, and unless we encroach on that we could not do it. Even if we encroach on the Working Plans, we could never supply the full demand for sleepers by the railways.

30272. What kind of tree have you found most suitable for lac cultivation?—There are two kinds of trees, the best lac comes from the *kusum* tree, it is a large tree which grows mostly in Raipur, and the lac from Raipur, which is a big centre for lac culture, is from the *kusum* tree. The other trees are the *palas* tree and the *ghont* tree; the biggest centre for that is Damoh. The value of *kusum* lac is very much higher than that of the other lacs, its value is nearly double, it gives a much clearer yellow stick, or shellac, than the others.

30273. Have you any means of starting turpentine factories?—No, we have no pine trees in the Central Provinces.

30274. You have not got trees which give resin?—There are no trees in the Central Provinces that can give turpentine.

30275. Do you give facilities to the people to collect leaves and cowdung for use as manure?—Yes, cowdung is taken away from our forests when we have these *gwaris* in the forest. In the rains people send cattle in large herds to suitable areas where we allow them to graze and of course they are kept in the forest at night. There are big stands for the cattle.

30276. Is it collected as manure for cultivation?—Manure is collected there and sold afterwards.

30277. Do they do that in villages which are surrounded by forests?—They will not go round just to pick up a little cowdung here and there.

30278. They ought to have a great supply of manure?—They have what they collect in their own villages from the cattle stands

30279. You do not object to their removing these materials from your forests generally?—Not at all.

30280. There is no tea cultivation here?—No.

30281. Not even near Pachmarhi?—No.

30282. *Sir Thomas Middleton.*: You referred to the method of supplying fuel in the Berars by the formation of *babul bans* in that area, what is the usual size of the *bans* which you work?—They are very small areas; they may be anything from 5 to 10 acres or 15 acres sometimes, most of them are very small.

30283. Are the *babul bans* that the Forest Department have in their charge widely distributed or are they congregated in certain tracts?—They are rather confined to three or four Divisions of the Berars. Where they exist, a good many of them are fairly well distributed.

30284. Have the villagers in the other districts of the Berars shown any desire to secure these *bans*?—Certainly, for cultivation; they would like them for cultivation, but it supplies so much fuel in a country where, if they did not get it there, they would have to go very much further, that I think it would be a great mistake to give them over for cultivation. I am prepared to admit that *babul ban* areas are equally good for cultivation, but as they now are they supply not only fuel, but they give cultivation and grazing. The system of producing these *bans* is to sow them up with a crop. We

lease out the area up to about seven years and with their crops they have to put in the seeds of the *babul*; they have to look after them and see that the land is weeded properly, and they hand over to us, after seven years, this area with the *babul* trees in lines growing on it; so that they do get cultivation on it; then we allow grazing in between the lines; it does no harm to the *babul*, and at the end of twenty-five years you get the *babul* which gives the finest fuel and is sold at colossal prices.

30285. *Sir Ganga Ram*: What is a *babul ban*?—*Babul ban* is the name.

Mr. Kamat: A *ban* might be called a grove.

30286. *Sir Thomas Middleton*: Then I take it that these plantations are very popular in the districts in which they exist?—Yes, distinctly; I should say.

30287 What I want to get at is whether the other districts of Berar show a desire to have such plantations or whether there is no land available?—I do not suppose anybody would go in for it himself.

30288. Because in certain other Provinces where fuel has been scarce there have been attempts, as the Chairman has indicated, to form village plantations which have been assisted by the Forest Department?—I think that probably could be enquired into; there must be a certain proof of wastage; if it is really very good black cotton soil there is not likely to be much wastage.

30289. Apart from the *babul*, is there any other quick growing tree which would be likely to thrive in black cotton soil?—Nothing better than the *babul*.

30290. You refer to the difficulty of keeping hay in stack for more than a single year. Is material fit for thatching difficult to get in the forest area?—I did not mention that fact, but a large amount of grass is cut for thatching purposes. In some of the districts all the grass that is extracted is used for thatching purposes and not for fodder, especially in Chanda, Bhandara and other places.

30291. Are good thatchers difficult to find?—Yes, but the thatching of the hut of the cultivator is very simple.

30292. I was thinking of your hay stacks?—Yes, it is rather difficult to find good material for it. It will increase the cost afterwards unless Government is prepared to do it merely for a nominal sum

30293. I think a well thatched stack would keep for at least two seasons?—The Military farms, I believe, do that, but then it is most beautifully and most elaborately stacked; most of the grass is steam-baled and they thatch absolutely down to the ground.

30294. You think that the cost of good thatching would make the system of preserving stacks for over two years impracticable?—I think we should in the end have to stack the hay under permanent corrugated iron covers or something of that sort.

30295. That would prove a very expensive matter?—Yes, very expensive

30296. Have you ever made any attempts to make ensilage anywhere?—No; it has never been tried.

30297 You have indicated that the Nimar cultivators use your grass freely; to what distance does it travel from your forests?—Some of them come in from 20 miles to get fodder.

30298. What is the quantity of hay that you will get from an acre of good forest; how many maunds?—I would not like to say off hand.

30299. What I want to get at is some indication of the productivity of the land when it is closed?—Yes; I will send you that later on.*

30300. Can you tell us anything about the quality of the grass in the forests?—It is the commonest; it is not the best. The grass called *mushan* is one of the best (*Tseilma Laxum*). In Nimar there is a very good grass which is known as *ponia* or *sena* (*Tschæmum Sulcatum*). I am not sure about the names; but I have a book where all these names are given and I might send that book along.

* From the statistics collected in the Southern Circle (*i.e.*, about half the area of Central Provinces) it was calculated that 7½ acres of forest area yielded one ton of grass. These would be open forest areas or areas recently felled over.

30301. Perhaps you could give us the names and a rough indication of their relative importance, whether they cover a large area or whether they are only found in selected parts; that would be of some help?- Yes; I will let you know that.

30302. In regard to your grass land I see that you provide roughly about 3 acres for every animal you graze?—That is our idea; then we would not be over-taxing the forest.

30303. It must vary very widely in different districts of the Province?—It does, but the difficulty is that you have large areas or blocks of forest and the grazing on the edges is very heavy because they do not go in beyond a certain distance; in the centre there are certain untouched areas on which we are perfectly prepared to let them graze.

30304. Have you made any observations on the effect of differential grazing on the quality of the herbage?—Outside the forest the grazing is unequal.

30305. Have you noticed any difference?—No; I cannot say we have. I do not think the grazing of the cattle affects the quality of the grass, but what we did find was that when we tried burning over areas after we had cut them to see if we could not get rid of the dead grass the result was that we killed out a lot of the better species and the coarser species survived, we found that it was rather against us.

30306. Apart from the reserved areas, all the grass land of India suffers from over-grazing?—Yes.

30307. There is no chance for the better species to survive and what I wanted to get from you was whether, when protected in forest areas, you noted any difference in the quality of the herbage?—No, I cannot say I have.

30308. That probably has not been looked for? No.

30309. Apart from your classification by privileged and normal rates, do you classify cattle in any way as between oxen and buffaloes?—Yes.

30310. What I want to get at is the corresponding rate for the cow and for the buffalo?—One buffalo does as much harm as two bullocks at least; the buffalo does a lot of damage by trampling and is very fond of rubbing itself against young saplings; it does much more damage in the forests.

30311. The buffalo will also want 1½ times or twice as much grass grazing?—Yes.

30312. *Dr. Hyder*: The policy which you have in the Central Provinces is dear grazing and cheap fodder. With regard to the first part of it, dear grazing, you certainly produce beneficial results, that is to say, you protect your forests and you diminish the number of old and useless cattle What would be the probable result of this policy of cheap fodder? Do you think it would result in diminishing the number of inferior cattle?—I think fodder is offered at a cheap enough rate now.

30313. I am not concerned with the question of the amount or cheapness; I am concerned with the question in relation to the number of cattle. Do you think if you offer cheap fodder this policy would result in eliminating old and useless cattle?—I am afraid that it is a matter of custom with the people.

30314. If you want to keep the cattle population of this Province within manageable limits of course the first part of your policy is all right, but I do not know whether the same results would follow from the second portion of your policy, namely, cheap fodder?—If they can get fodder cheap enough I suppose they might say 'Why worry about getting rid of these poor cattle, if we can feed them so cheaply'?—That is the danger I suppose.

30315. Have you got enough light railways for the proper working of your forests, for making your forest produce available in agricultural area?—This is the first scheme we have attempted.

30316. Just near Muramasilli?—Yes, near about that place. That is the first one we have attempted and we have not got any further schemes. Others have been thought of but nothing has been considered good enough or likely to be paying enough to start with.

30317. You say in your note that your aim is to give the maximum grazing facilities that can be made available for pasture grounds. How do you propose to do that?—The only way one might do that is by putting high rates on the near areas and cheaper rates in areas a little further away.

30318. What is this difference of opinion that you have with the Settlement Department? You are comparing your grazing fees with the land revenue increases in the settlement?—Our point is that the land revenue settlements get put up but our grazing rates are practically the same to-day as they were fifteen or twenty years ago.

30319. Which would you prefer the contract systems or departmental working for the extraction of forest produce?—We are finding now that departmental working is much more profitable

30320. And more satisfactory to the agriculturist?—Well, I think so, certainly where we have been trying to provide supplies of fuel. For instance in Raipur, it will really come in useful for bringing out fuel on the Raipur side, but that is more really a town business than one for the agriculturist. The average fuel supplies are done quite satisfactorily by the small contractor who takes a coupe and fells it. Most of our departmental work is now for big schemes like big timber and so on.

30321. Take this auction system: you interpose a middle man between the agriculturist and yourself?—Yes, but that only applies to green fuel. There are always supplies of dry fuel which are entirely disposed of by the license system, by the cultivator himself going in; the quantity of fuel that is taken out in every Division in the Province is very large under that head under the license system.

30322. Would you prefer the license system or departmental working?—I would not be in favour of departmental working for fuel

30323. The extraction of lac is entirely departmental is it not?—Yes, so far as our forests go.

30324 What is your revenue from lac?—There are two big Divisions, Damoh and Raipur. Damoh a few years ago gave a revenue of about Rs. 3,00,000 in one year but unfortunately we have had bad crops and it has now gone down to about Rs. 50,000 this last year, in fact about Rs. 70,000 I should say

30325 And the net financial result?—That is about the net financial result. It is a very difficult crop to deal with as you are absolutely at the mercy of the climate.

30326 Is the collection of *hirda*, *mowra* or *tendu* leaves free?—No.

30327. Do you charge anything for the extraction of tigers from those forests?—No; you have got to get a shooting permit to shoot in the forests and that costs nothing.

30328. *Sir Henry Lawrence*: What is your tiger population?—It is very large.

30329 Have you had a census taken?—No. We had over 50 tigers taken out of one big block of forest within two years by certain Maharajas who came to this Province some years ago.

30330. *Mr. Wills*: It is a fact, is it not, that the *babul ban* found in Berar serves a very useful purpose not merely for the production of timber but also for grazing purposes?—Yes; *babul* is used as timber wood for the construction of carts.

30331. Then as regards the relation of forestry to agriculture; what department of administration do you consider represents agriculture?—If any question comes up the first person to deal with it would be the Deputy Commissioner.

30332 That is the Revenue Department and not the Agricultural Department?—That is so.

30333. *The Raja of Parlakimedi*: For what purposes do you lease out open areas in the forests?—Only as forest villages and this is mainly for the purpose of supplying labour.

30334. And you have been allowing certain areas of forest for cultivation also?—That is absolutely negligible. There used to be in the old days quite a lot of shifting cultivation which has been gradually stopped, and what cultivation there is inside Government forests now is entirely confined to our forest villages.

30335. Is that on lease or is it permanent cultivation?—No; it is taken from year to year. We have very simple rules which have been framed by Government. Cultivators in forest villages do not come under the revenue rules at all.

30336. Do you restrict the expansion of the area?—Yes, it is laid out definitely. Supposing we make the village 500 acres in size, it is demarcated, and we only give

cut say a couple of hundred acres of that for cultivation to these people to begin with, leaving enough spare land for the natural expansion of the village. We want to keep them within our control for our labour purposes.

30337. You do not encourage the cultivation part of it?—No; we just give them enough to carry on with. As a matter of fact, only certain special classes of people are supposed to come into these villages, such as Gonds, Korkus and other jungly tribes; we do not want highly educated cultivators.

30338. You do not allow them to carry on *faltu* cultivation?—There is a small area called the Baiga chak in Mandla where this cultivation known as *bewar* goes on. But there is only a little of it left.

30339. It has not been entirely eradicated?—No, it has been kept for the benefit of the Baigas within certain limits.

30340. You say that the public make use of your forest roads in certain parts. Can you not get some grant from any of the public bodies near by?—When these roads were constructed the Government rule was that we could prohibit outsiders from using them as they were purely forest roads, but that they could be used provided the District Council gave us a grant towards their upkeep and maintenance. We applied to one or two District Councils and the reply was that they would be delighted to use the roads but they had no money to give. We have not received anything from them so far.

30341. And do you try to keep their carts off?—We have tried, but it is really more bother to us than it is worth, for it means keeping *chowkidars* and that sort of thing and causes general friction and probably squabbling and things of a similar nature.

30342. In the areas where coupe felling is going on, do you not allow grazing to go on also?—Not after cutting.

30343. Your figures show that there has been a decrease in the area set apart for grazing. The figure for 1925 is less than the figure given in 1916-17?—There is some mistake here. The number of cattle is slightly less, due probably to cattle mortality, but the area open to grazing is 192 square miles more than in 1916-17.

30344. The decrease is not because of the restriction of land?—No.

30345. *Prof. Jangulee*. Could you give the Commission an idea of the training which your subordinate officers receive?—You mean the non-gazetted officers from the forest guards upwards.

30346. Yes?—The Forest Guard has no training whatsoever. We just pick him up locally and start him with a small salary, he has no training whatever. Then there is the Forester, he may start also without any training. We have had a little Forest School at Balaghat for the last 15 years. We train there occasionally the Forest Guards who have some education. They have to be able to read and write in the vernacular. These Foresters are given a training which enables us to promote them up to Deputy Rangers. They get from Rs. 40 to Rs. 60. Then comes the Ranger class; their pay is from Rs. 80 to Rs. 200; they are now trained at Coimbatore in Madras. The training of the Rangers used to be at Dehra Dun, and there is still a Rangers' course there; but the Central Provinces Government now send their men to Coimbatore. They have a two years' course there.

30347. In the school you refer to, is the teaching done in the vernacular? Yes. This is in Balaghat.

30348. Which officials come in direct contact with the agriculturists? I suppose the Forest Guard is the man who comes in most direct contact?—Right up to the Ranger.

30349. I understand that the contact of your department is more intimate with the Revenue Department than with the Agricultural Department; is that so?—I suppose we do have more contact with the Revenue Department because the administration of the district is in the hands of the revenue authorities; and when there is any administrative question, a Forest Officer naturally goes to the Revenue Officer in charge. But as I have already said, we come in contact with the Agricultural Department more with regard to questions of fodder supplies, cattle farms, etc., that is to say, the bigger questions.

30350. Have you undertaken any survey of the various types of grasses in the forest areas of the Province?—I cannot say we have.

30351. Are you familiar with any research which has been done on the various kinds of grasses in the Province?—As to their value you mean.

30352. I mean with regard to their feeding value, growth, and quality in general?—I studied it a bit myself, I have written a small book on the grasses of the Central Provinces As a matter of fact, somebody in the Agricultural Department took up the question of grasses and he also wrote something about it. Perhaps Mr Plymen would be able to speak on it.

30353. You are not in touch with that work?—I cannot say we have done any research work of that kind. I think it was the Economic Botanist who took up this question in the Agricultural Department and studied it.

30354 Are you carrying on any investigation in the deterioration of the forest areas and the forest soils?—I cannot say we are really carrying on any investigation into the matter. Cases of that sort occasionally come up. Now, during this process of making new Working Plans reports come in, but no regular investigation is being carried on into the matter, though we could put our finger on certain places and say that a particular area has distinctly deteriorated. I would not say that deterioration is going on to a very large extent, and I think we are keeping things sufficiently in hand to say that our forests are not being ruined, but I should not like to see the grazing go much further, if it did, I think damage might be done. If our hands were forced then I think damage might be done. If we can keep things as they are now, we shall always have enough forest for the people.

30355. Have you any information as to the quality of the baled grass?—Provided the grass is cut early in the season, before the end of the year, the grass is all right I prefer to see it cut in October and November

30356. What is the cost of baling?—You mean hand baling

30357. Yes, hand baling? I think that is the common practice here?—That would cost on the average Re 1 per ton

30358. What is your agency for distributing baled grass?—It is done through our staff. There again we should have to go to the Deputy Commissioner and tell him we have got this stuff in certain centres. His Tahsildars and other people would then let the villagers know that it was there. That would be the best agency to get it known.

30359. Is there any intermediary between the Forest Officer and the cultivator in the sale of the baled grass? Our Forest Rangers, Foresters and Forest Guards could all be intermediaries in the matter, but it would help a great deal more to go to the revenue authorities and get their assistance.

30360. There is no other foreign intermediary between the Forest Officers and the cultivators?—No.

30361. What principle do you follow in levying these various grazing rates; ordinary rates, privilege rates and commercial rates?—I should not like to say. We consider of course that even these privilege rates are unnecessarily low. Practically it comes to this, that Government wants to give the agriculturist feeding for his plough cattle for practically nothing. My idea is that you might as well give it free as charge an anna a year. This mixture of rates is really a great trouble. I would much rather have some simple system, some being free and the rest charged at a reasonable rate.

30362. Have you made any proposal with regard to this to Government?—Things have been discussed *ad nauseam*.

30363. Do you find any indication of stall-feeding becoming popular among the people?—I understand it is done in Berar, but then I suppose that is by force of circumstances to a great extent.

30364. Having perhaps come to the limit of the grazing area available from forests, perhaps that is the only direction from which improvement could come. You have discussed this question of stall-feeding with the Agricultural Department?—Yes, we have certainly discussed it. At different times attempts have been made to introduce stall-feeding; some of those attempts were made a good many years ago.

30365. Could you reduce the cost of fuel ?—We could not reduce it much more than it is already. The dry fuel is one pice or two pice per head-load.

30366. You could not reduce it any further ?—They used to have one pie, but nobody deals with one pie nowadays.

30367. Do you think better transport facilities would help to reduce the price ?—No, all the dry fuel comes by cart. I suppose improvement of roads should help things.

30368. You made a reference to lac and sericulture in reference to the extraction of minor forest produce. Is there not a department known as the Department of Industries ?—Yes.

30369 Is lac and sericulture under that department ?—No, anything from our forests is entirely under our department, including all minor products.

30370. *Mr. Calvert:* You have referred to an area of 3,400 square miles as being closed to grazing; how much of that is also closed for cutting grass ?—None of that would be closed, we do not prevent the cutting of grass in these closed areas at all. We would like to have it cut.

30371. The cutting of trees within 20 yards of a bank of a stream is forbidden, is that a rule under the Forest Act ?—No, that is a rule made by Government.

30372. Under what authority ? - Under the Revenue Act.

30373. Have you in your staff a separate Forest Botanist ?—No, not now in this Province.

30374. I gather you have practically no complaints with regard to soil erosion in this Province ?—Not to any extent, one hears of it, but one cannot say that areas are definitely disappearing through erosion.

30375. The proposal has been made that the reclamation of land that has been eroded should be done by the Forest Botanist. In the absence of a Forest Botanist it is difficult to know what you could do ?—They have an afforestation scheme in the United Provinces. I believe it is a very fine scheme, but that is not run by the Forest Botanist as far as I know.

30376. You have nothing comparable to Etawa here, have you ?—No.

30377. As the result of the research work which is being done at Dehra Dun, is there any likelihood of development of forest industries in this Province ?—I think so. We have got one research officer as it is, and I hope the time will come when we might have another officer for that purpose, getting in touch with the markets, starting industries, and so on.

30378. Have you a Utilisation Conservator ?—No, I am just taking the matter up and we are appointing an officer for a few months. I do not think we have enough work yet for a whole-time officer. We shall probably be putting an officer on for six months to try and get in touch with outside markets for the utilisation of produce.

30379. Do you think there is sufficient scope for industries subsidiary to forest produce ?—I think in the lac industry in the village areas a good deal could be done.

30380. Paper ?—No.

30381. Have you any Forest Engineers ?—We have not.

30382. Is that because your forests are in accessible places ?—No. It has been recommended several times by us, but Government has not approved of the proposal It does not consider that there would be sufficient work for a Forest Engineer.

30383. That opinion was rather generally held at one time, but other Governments have now appointed Forest Engineers with beneficial results. Do you think you would increase your income by having a Forest Engineer ?—I do not say we would do great things, but he could be put on the big road works and things of that sort, and I think that would lead to development.

30384. In the Central Provinces, your forests are generally in fairly accessible places ?—Yes.

30385. So, the question of wood going to rot for lack of transport does not apply here ?—No.

30386. *Sir Ganga Ram*: The very valuable produce of your forest which is bringing you a large sum of money is myrobalam?—Yes.

30387. Do you encourage the growth of that now?—We do not cut the tree that bears this fruit; under our Working Plans the *harra* tree is specially put down as not to be cut.

30388. How much revenue do you get from myrobalams?—The Balaghat district alone is giving us Rs. 30,000 a year, on a big contract we have got with a firm in Bombay; they pay Rs. 30,000 a year for all the *harra* in Balaghat.

30389. You give it out on contract?—Yes.

30390. They must be making a huge profit. Myrobalams worth Rs. 4 crores are exported from India to foreign countries?—There is a certain amount from outside.

30391. *Sir Henry Lawrence*: What is the total revenue from myrobalams?—I should think about Rs 60,000 from the Government forests.

30392. *Mr. Wills*: A large quantity comes from Indian States?—There are large quantities outside Government forests.

30393. *Sir Ganga Ram*: You have got some match factories here?—There is one at Kota in Bilaspur district.

30394. Have you any wood specially suited for it?—That has become rather a difficult question. The wood they have been using is the *Bombax malabaricum* or *semal* wood; they cannot get enough of it.

30395. I know that they have been going as far as Hardwar and other places for it. Cannot you grow some more of these trees? It is very easy to grow?—That is a point that is under consideration now, I very much doubt whether we should be able to create it in time or quickly enough for them. They have tried to make out that we can supply them with that in large quantities in 25 years, but there is nothing on record to show that we can do anything of the kind. Plantations like that are likely to be fairly expensive. As I put it up to Government, if they wish to keep this industry going they must be prepared to start these plantations and work them at a loss. My own idea is that they could use the *salai* instead of *semal*. We can supply them with any quantity they want or *boswellia serrata* instead of *semal*.

30396. *Semal* is the only tree which is suitable?—That is the only one they are using.

30397. I asked you whether you could not encourage the growth of *semal* trees?—It is very scattered; you get it on the alluvial soils along the streams, there is a tree here and there.

30398. It grows nicely on the banks of streams?—It would mean starting plantations.

30399. Would it not be worth trying?—As I say, if Government is prepared to take the thing up! I do not think we will ever make it pay.

30400. It would increase the wealth of the country?—There is only one match factory, and we should not be able to supply anything to them for twenty-five years; we have got to think twenty-five years ahead, I should say thirty-five years myself.

30401. You said you greatly advocate *babul* growing?—Yes.

30402. Do you advocate the growing of the trees on the sides of fields?—One does see them a great deal along the banks of fields, but I do not know whether the cultivator himself does anything in that line, I take it he does not. I fancy that all the *babul* that you see along the *bunds* on black soil is self-grown, but they could do a lot themselves in increasing the amount of *babul* in a place like Berar by taking the trouble.

30403. But it casts a very injurious shadow on the crops?—I cannot express any opinion on that.

No cultivator will put it on the side of his fields.

30404. Are there many camels in this Province?—No, very few.

30405. It is very good food for camels?—We used to use them for transport purposes a good deal, but we do not get many of them now. They have to come down from Rajputana side.

30406. Would you not recommend to Government to encourage camel breeding? There is good food for them here?—Camels do not do well in this Province; all the camels that we used for transport were sent back to the drier regions before the rains.

30407. The climate is unsuitable?—Yes.

30408. By forest roads, do you mean *kutcha* roads? They are not metalled roads?—Most of our roads are *kutcha* roads, they are not metalled roads, but there is no reason why we should not make our own metalled roads if we had a Forest Engineer.

30409 Are the slopes of your forestry land so well wooded that they do not let out the water when there is heavy rainfall?—Yes; I should say distinctly so

30410. You do not lease forest slopes to the people for cultivation?—No.

30411. Is there a demand for it?—I should not think so

30412. Do you terrace anywhere?—The slopes in our forests are covered with tree growth, and we just work them in the ordinary way as we go along, under certain Working Plans.

30413. *Sir Thomas Middleton*: You graze about 3½ million cattle here?—Yes.

30414 Could you give us any sort of indication as to what proportion would be at privileged rates, what at ordinary rates and what at commercial rates?—I shall send figures.

30415. *Sir Henry Lawrence* What is your total grazing fee?—Rs 25 lakhs.

Sir Thomas Middleton: You say it is Rs. 14 lakhs.

30416. *The Chairman*: Would you let us have a statement, giving all those figures?—Yes.*

30417 *Sir Thomas Middleton*: I take it the position is that the Forest Department is practically the controller of most of the grazing, foresters have adopted as a definite policy the view that grass should be cheap and grazing dear; that policy was laid down at a conference in 1913 but nothing has yet been done to give effect to that policy, there has been no alteration in the relative charges?—That is what it comes to.

30418. *Sir Ganga Ram*. Are you aware of the system of keeping *bhusa*? We call it *mosal*. It is a cone about 100 feet in diameter at the base, and going up to a height of 40 feet; it is covered over with thatch, and there is a *kutcha* drain all round in order to keep off the rain water. It keeps the *bhusa* for a long time, I have seen *mosals* which have kept *bhusa* in good condition for five years. Are you aware of that practice?—We do not know anything about it.

30419 *The Chairman*: Do you know of any cases where cultivators have planted trees or shrubs for fuel purposes?—I do not.

30420. It was suggested by one witness before the Commission in this Province that the *karanja* tree might be used for that purpose. Would you support that view?—No, I do not think it produces a particularly good fuel; it would be good for the fruit from which oil can be extracted.

30421. What is your best quick-growing fuel tree?—*Babul* is as good as any other.

30422. In planting out *babul* in plantations, what spacing do you give?—We do it in lines of about 6 feet apart.

30423. Have you casuarina here?—No.

30424. *Sir Henry Lawrence*: Would it not grow here?—No; it will grow along the sea coast; it is largely grown on the East Coast near Puri.

Vide Appendix.

30425. **The casuarina trees in Mysore are 50 miles from the sea?—It wants a very sandy soil.**

30426. *The Raja of Parlakimedi*: Do you have in your forests any tanning species?—Yes. The *babul* bark is used for tanning. The bark of the *Terminalia arjuna* is used, but they cannot really use it widely because it is a tree that grows along the streams, and we object to the cutting of it.

30427. *Prof. Gangulee*: What about myrobalams?—It is of course the main thing but it is exported. I am thinking more of the local uses. Then there was a shrub called *tarwa* (*Cassia auriculata*) which was introduced in the Central Provinces towards the end of the War, and we were told to make a plantation of it. This is, the chief tanning material in South India, the scientific name is *Cassia auriculata*, and it grows in Berar, but nobody would use it here.

30428. *The Raja of Parlakimedi*: What is your revenue under that head?—Nothing

30429. *Mr. Kamat*: There is a paragraph in the latest issue of *Capital* which may interest you. It says: "The secret of turning tropical grasses and other fibrous substances into clothes to wear is believed to have been solved by Dr. Dinshaw Nanji of Birmingham University. Chemical processes are said to have been perfected for separating the fibres from the raw material, and preparing them for spinning"?—I have not seen that.

(The witness withdrew.)

APPENDIX.

Statistics of cattle grazed and rates paid in the Central Provinces for 1924-25

Kinds of animals.	Ordinary rates (average).	Commercial rates (average).	Number grazed at ordinary and commercial rates (*a*).	Privileged rates (*b*) (average).	Number grazed at privileged rates (*c*).	Number grazed free.	Total grazing revenue realised.
	Rs. a. p.	Rs. a. p.		Rs. a. p.			Rs
Buffaloes ...	0 12 0	1 8 0	258 266	0 4 0	129,995	1,629	
Cows and bullocks ...	0 7 0	0 12 0	728,299	0 1 6	1,756,607	(*d*) 228,847	13,97,526
Goat, sheep and other animals ..	...	...	420,142	...	2,285	457	
Total ...	...	...	1,406,707	...	1,888,887	230,933	13,97,526

(*a*) Number not available separately for animals grazed at ordinary and commercial rates.
(*b*) Rates vary from 1 anna to 4 annas per head.
(*c*) Number of cattle a cultivator may graze at ordinary rates is the number he is entitled to graze at privileged rates.
(*d*) Of this 180,290 are Berar cattle, where special rules are in force, not applicable to the Central Provinces.

Rao Bahadur M. G. DESHPANDE, Nagpur.

Replies to the Questionnaire.

Question 1.—Research.—(*a*) The present organisation of research work in this Province, judged by its results, is in no way unsatisfactory. I would, however, like to make one or more suggestions which, in my opinion, might be carried out with advantage. In the first place more facilities and more funds should be provided for district research by investigators on the spot I am in favour of the formation of a Provincial Research Committee at Nagpur under the chairmanship of the Director of Agriculture. This committee would administer a special permanent research fund and the problems affecting the welfare of the agriculturists should be submitted to the committee by the District Officers with an estimate of the money and staff required to deal with them. The Research Committee would have the advantage of knowing what research schemes were contemplated all over the Province, and if the problem seemed a sufficiently important one would allot men and the means for undertaking the investigation The central expert at Nagpur would act as an adviser to Deputy Directors in laying out and controlling such local research scheme in addition to carrying on his own general research laboratory or station.

It is not enough if competent research officers and administrators remain content with doing useful work themselves but they should train other workers in their respective lines. If this is done the country would have as many competent indigenous workers as India needs. The main advantage of employing indigenous workers is that they are not likely to be lost to the country in the latter part of their service after acquiring great experience at the cost of the State. This is generally the case with research workers brought from outside, and I am strictly of opinion that research workers should be as few as possible from this country

Research work is of no value whatever to the agricultural masses unless the results obtained from it were brought to the notice of the cultivators and were incorporated in their general agricultural practice. If this is done, I am sure a special fund from the public would come forward and maintain the research work.

(*b*) I do not know any particular case in which the progress is not being made because of the want of skilled workers, or field or laboratory facilities for study, but it is a general fact that the results obtained from the research are not brought to the notice of the cultivators and are not incorporated in their general agricultural practice.

(*c*) Southern portion of the Central Provinces and Berar is a great cotton producing tract, and it will be quite advisable if some research on cotton breeding, cotton physiology, cotton technology, cotton entomology and cotton mycology is carried on. If some good comes out of this research it will be good for both the Government and the people I would lay emphasis on the fact that the Agricultural Department should always take an opportunity of encouraging and, if necessary, subsidising non-official gentlemen who have facilities and are desirous of conducting small schemes of research work on their own farms under the direction and guidance of officers of the Agricultural Department. I have come across many such progressive cultivators, and with a little encouragement and help from Government there is a wide field for extending their knowledge of agricultural improvements at small expense and in a practical and effective manner.

Question 2.—Agricultural education.—Agricultural education should be of such kind as would create sympathy and taste for agricultural peasants and would acquaint the youths of the country with theory and practice of agriculture.

(i) Existing educational institutions and staff are quite inadequate for spreading general knowledge among the masses.

(ii) There is an urgent need for extension of teaching facilities all over the Province.

(iii) It will be a great help if the teachers in rural areas be drawn from agricultural classes. These teachers are well acquainted with the local conditions and can very well impress upon the cultivators the importance of agricultural improvement.

(iv) There are at present only two agricultural schools in this Province where the attendance of students was not so very satisfactory but is now gradually improving. Those schools are, in the first place, in their infancy and the people from rural areas have not realised the importance of education. If, however, the attempts are carried in the same direction the attendance will still more be increased and more schools will be needed.

R. B. M. G. Deshpande.

(v) The establishment of agricultural clubs in vernacular and Anglo-vernacular schools will, in my opinion, be the main incentive which will induce the lads to study agriculture. The teachers of these schools should take part in these activities and should try to divert the minds of the lads towards agriculture. The schools should be provided with small plots of land attached to the school where the boys interested in agriculture should be allowed to have small gardens and to enjoy the outturn for themselves. Every year the central educational institution (College of Agriculture at Nagpur) should invite such clubs and should show all the improvements carried on by the department. Students of the College of Agriculture at Nagpur should take a leading part in such activities and give the advantage of the knowledge to their youthful brothers.

(vi) I do not think that the pupils going to such schools should be mainly drawn from agricultural classes; advantage may also be given to other boys.

(vii) India is mainly an agricultural country and hence the general atmosphere even of primary schools, should be agricultural. In the last two classes of high school agriculture should be added in the groups of optional subjects, students selecting this group would have preference for admission into the Agricultural College A portion of the time at school may be devoted to manual work. Courses in general agriculture, elementary botany, zoology, etc, be taught to the students of normal schools and the student taking up such courses be given preference for teachership in rural primary schools.

(viii) I am in favour of (*a*) nature study, (*b*) school plots, and (*c*) school farms.

(ix) Intelligent and hard working students generally come from middle class. If such students are selected and sent abroad for scientific training, the country would have competent indigenous workers in scientific field and thus the middle-class youths will be attracted towards agriculture The tendency of bringing research workers from outside should at once be checked

(x) Majority of students who have studied agriculture have up till now accepted Government service Uneconomic condition of farming is really the chief cause of farming being not attractive to college graduates or even to high school men, unless they are content with a very low standard of living and unless they are prepared to work as peasants. In spite of all these adverse conditions, there are some progressive farmers in the country who can very well make use of the students turned out by agricultural colleges; but they are not really capable of acting as business managers in any commercial venture without actual experience They should therefore be given more opportunities in the college for doing practical work.

(xi) I do not see any movement for improving the technical knowledge of students who have studied agriculture. Those who are already in Government service actually carry out the orders without even utilising the knowledge they have gained while students.

(xii) Adult education in rural tracts can be popularised by actual demonstrations in the field. I have no particular scheme in view for the present.

(xiii) With reference to adult education in rural tracts, there is a great deficiency in the present system of agricultural education. There are few, if any, facilities provided for the training of men of the field men type in specialised forms of agriculture from the practice of which such men can make a good living. In agricultural schools (like Powarkhera school), subjects such as well-making, working of boring machines, tractor driving, fruit cultivation, repairing of implements, *gur* manufacture, care of cattle, poultry farming, etc., should be taught to adults along with the boys. Practical knowledge of these courses should be given within a period of six months.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—Those that are deputed on the work should be men of courteous habits and should mix with the masses as if they were one of themselves. They should have demonstration lorries with all the necessary implements and accessories, and should send their programme in advance which should be framed not according to the convenience of the officers but according to the convenience of the people. The lorries should be of such a make as to be taken over the country roads.

(*a*) The following measures will, in my opinion, be more successful in influencing and improving the agricultural practice of cultivators— (1) Well-organised, continuous, intensive demonstration and propaganda work conducted in the districts, specially in co-operation with non-officials and non-official local bodies; and (2) the organisation of sources of supply and maintenance in the case of improved materials and of supervision and direction in the case of improved methods.

R. B. M. G. DESHPANDE.

The amounts of money spent on research work and on propaganda work are quite disproportionate, having regard to the relative importance of these two necessities in agricultural progress. Research work is of no value whatever to the agricultural masses unless the results obtained from it are brought to the notice of cultivators and are incorporated in their general agricultural practice. My experience as a member on the Board of Agriculture, Central Provinces, shows that money for research is generally comparatively easy to obtain, but the provision of funds for propaganda among the cultivators is almost ludicrously inadequate. I would prefer to pay more attention to propaganda work than to research side.

Use of lantern slides and, if possible, motion pictures would increase the effectiveness of field demonstrations.

(*c*) Indian farmers have shown willingness and even keenness in adopting improvements which promise to pay them, but there is no co-operation between them and the Department of Agriculture on account of the autocratic tendencies of the latter. I do not think if good methods are shown to the cultivators, they will abstain from expert advice. Courtesy on the part of Government officials is the only method I would suggest whereby cultivators may be induced to adopt expert advice.

(*d*) In majority of the cases demonstration and propaganda work has met with a failure. This is partly due to the non-realisation on the part of the farmers and partly to the negligence of the subordinates carrying on the work The Department of Agriculture should therefore establish proper co operation between the farmers and the subordinates before they proceed to start any part on these lines. Subordinates must be made to bear in mind that they are the servants of the people and to render honest advice to them is their primary duty. Unless this is done, I do not think any propaganda work can be successful.

QUESTION 4.—ADMINISTRATION.—(*a*) I feel that a better co-ordination of the agricultural activities of Governments in India, especially with reference to the means to be adopted for introducing agricultural improvements to the cultivators would be facilitated if provision is made for a fuller exchange of experience and opinions between officers of the Agricultural Departments of different Provinces, particularly of such Provinces to which certain problems are more or less common.

(*b*) I do not think it is desirable to increase the scientific staff of the Government of India at the present time, I would lay more emphasis on propaganda work.

(*c*) (i) From my point of view, Agricultural and Veterinary Services are far from satisfactory. The officials of these departments do not realise that they are the servants of the people and do not give the farmers the full benefit of their services. Supervising officers of these departments should therefore, insist upon their subordinates that they are public servants and should discharge their duties in the interest of the public.

(ii) As regards railway transport, adequate number of wagons are not available in the harvest season and railway transport cost about 50 per cent more in India than in countries like America. Railway companies should therefore be induced to grant concession rates to farmers. Besides this, pilfering is a common practice carried on by railway servants and hence the articles of farm produce never reach the consumer or the dealer in a safe condition. This is especially true in the case of orange industry Railway authorities should therefore be insisted upon to have strict watch on the subordinates and avoid pilfering and damage during transit.

(iii) Indian farmers have to spend very much on transport. Communication from farm to village and from village to market is very poor, and as such not only costs much but increases the depreciation charges of carts and bullocks.

(iv) Meteorological Department is rather doing good work.

(v) and (vi) More post and telegraph offices should be opened in the rural areas.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—In India, the agriculturists are deeply in debt and the best way to help them is by development of co-operative land mortgage credit. The present credit societies of villages cannot satisfy their needs for meeting the old debts of their members or the purchase of land or making improvement in their landed estates. This will be possible when land mortgage credit is developed on a large scale. But the important point to be considered in this connection is whether the present organisations of primary village societies, the Central Banks, and the

Provincial Banks are suited to develop that land mortgage credit or altogether different institutions must be started to do the thing required. There seems to be no objection to developing it by the present institutions. The only precaution that is to be taken is to keep this branch separate from their short-term business and it should be financed from the funds obtained for long periods, either in the form of deposits or debentures, to which a reference will be made later on.

There cannot be two opinions on the question that co-operative land mortgage credit must be developed in India on a large scale, to relieve the agriculturist from their old debts. Whether separate institutions are to be started or the present credit institutions—the primary societies, the Central Banks and Provincial Banks can manage the land mortgage credit, is a secondary question.

Co-operative land mortgage credit, if properly introduced, will greatly benefit India. For the improvement of agriculture, for the adoption of machinery and modern methods, the employment of large capital is necessary. Modern farming is a business which must be supported by plenty of ready money. This is possible if agricultural credit is developed fully.

The next important question with regard to land mortgage credit is whether it can be developed in India. The answer to this question can be given in the affirmative; but the same rests on several important assumptions. It must, for instance, be taken for granted (i) that the laws of the land will be modified, where necessary, so as to favour an organised system of land mortgage credit; (ii) that owners of land will combine with each other in order to better their credit because they understand (*a*) the necessity for intensive cultivation, and (*b*) how to cultivate intensively, and (iii) that the necessary organising agency is placed at the service of the landowners. The introduction of a system of land mortgage credit in India will certainly require guidance and supervision and even State money but the last must be given in the form of a loan only in the beginning. In India it will be inadvisable for the State to stand aloof from a movement of this type. It is for the development of land mortgage credit that State loans should be made in the beginning in order that the investing public should learn the importance of this system. They will come to realise the security contained in the land mortgage bonds, when the State finances are forthcoming. Until the public realise this, the State should not take away its aid. In Egypt, for example, the State Bank holds shares in the Agricultural Bank of Egypt. The State must help the development of their business by other ways also. A guarantee of interest on the issue of debentures must be given by it to popularise them. There seems to be no objection for giving the guarantee as it involves no immediate expenditure by the State, and probably none at any time. The most satisfactory form of help is a State guarantee of interest on a limited issue of debentures for limited term in order to reassure the public as to the new investment and to give them time to become familiar with it. The guarantee can be given to a special land mortgage bank if one be started or to a Provincial Bank if it undertakes and manages the business through Central Banks and primary credit societies, as is being done at present by the Central Provinces and Berar Provincial Bank. Unless the debentures are made trustee securities, they will not be prized by the investing public; and this must be done by making necessary amendment in the Trusts Act.

A reference is made above that the Central Provinces and Berar Provincial Co-operative Bank, Limited, has been managing the land mortgage credit business through Central Banks and primary credit societies. It will, therefore, be not out of place to give brief details about the system introduced by this bank in the societies under the Akola Central Bank.

The Central Provinces and Berar Bank has advanced money to good and solvent members of some good societies affiliated to the Akola Central Bank, making these societies and that bank parties to the transactions. The loans are first made to the Akola Central Bank, the latter makes them to the societies which on their part transfer the amounts to their good and solvent members on security of first mortgage of their landed estates. The loans are made repayable during the course of sixteen years by equal annual instalments of 15¼ per cent. The mortgages are assigned to the Akola Central Bank by assignment deeds by respective societies and the former reassign them to the Provincial Bank by another assignment deed. Besides the mortgages, the societies execute demand pro-notes for amount of loan in favour of the Akola Central Bank which, in its turn, besides giving its own pro-notes, transfers them to the Provincial Bank. There is another security attached to this transaction, and that is the two securities are required to be given for the due repayment of mortgage debt.

Before any society is admitted to the scheme, it is the duty of the Akola Bank to investigate into the title of the prospective borrower. They have appointed a special committee for doing all primary work such as investigation of title

R. B. M. G. DESHPANDE.

deeds, liabilities, etc. The loan is not advanced unless and until it is sanctioned by the Governor, Central Provinces and Berar Co-operative Federation, who is trustee for the debenture-holders and to whom all mortgages have been assigned to serve as security to debenture-holders. As regards recovery of money, the Akola Bank has held itself responsible under an agreement with the Provincial Bank.

The annual instalments, constituting a sum of Rs. 15¼ for every hundred rupees advanced represent Rs. 6¼ for principal and Rs. 9 as interest. The principal is held by the Governor of the Federation in sinking fund which is invested in Government paper while the interest is disbursed as under:—

1 per cent to the Akola Bank.

8 per cent to the Provincial Bank for the loans advanced by it.

In 1920, the Provincial Bank issued debentures of two series, carrying interest at 7 per cent and 6 per cent, respectively, and could easily dispose of the former on the face value of about a lakh, without any advertisement. The 6 per cent debentures were subscribed for a small amount though special privilege was given to the holders thereof, for getting them redeemed after a notice of six months, and the Bank has realised that out of two series of debentures carrying different rates, one carrying higher rate only is favoured by the public and hence it is inadvisable to issue two series of debentures carrying different rates of interest.

The Provincial Bank redeemed the 7 per cent debentures in 1924 because it had very heavy surplus fund.

There are some other points with regard to this scheme and they must be touched here.

First, as regards the mortgages, the mortgagor is required to repay the amount by 16 annual instalments of equal amount at 15¼ per cent, 6¼ per cent, representing the principal and 9 per cent interest. This 9 per cent rate is payable for all the six years on the original amount and not on the balance outstanding, and hence it is excessive. So instead of making the interest payable on the sum advanced, it should be made payable on the unpaid balance and in the latter case the scheme will be best appreciated by the landholders. The next thing about the mortgage is that the mortgagor has been given the privilege to redeem the mortgage after giving three months' notice of his intention to do so, this is an inducement for him to make his best efforts to be free from debt as early as possible. The third important condition is that in case of default in making payment of any instalment, the whole debt becomes due, and the society is at liberty to proceed against the defaulter in a court of law. So all possible safeguards have been taken in drawing out the mortgage deed, and hence it offers very good security for the debenture-holders.

Secondly, the sinking fund is maintained by the Governor, Central Provinces and Berar Federation, as trustee for the debenture-holders. As already said above, all the instalments for the repayment of the principal sums are held by the Governor of the Federation in a fund which is invested in Government paper or securities approved of by the Registrar. The interest accruing on the paper or other securities is credited to the fund and reinvestment in Government paper or otherwise directed by the Registrar. The debenture-holders are to be paid the money from this fund and any surplus that will remain will be distributed amongst the societies concerned, which will credit the amounts to their reserve fund. Now that the 7 per cent debentures have been paid off in full by the Provincial Bank the trustee will pay the former the loans made by it from the proceeds of the sinking fund investments. The Provincial Bank is at liberty to reissue the redeemed debentures any time during the currency of the mortgages.

Under the scheme, the Provincial Bank has agreed to make loans of a sum not exceeding Rs. 1,50 000 and it is entitled to issue debentures of the aggregate value of the mortgage loans made by it.

The effects of the scheme have been wonderful. Some of the mortgagors were able to redeem their mortgages within five years and some within four years even. There have been only a few defaulters.

QUESTION 10.—FERTILISERS.—(*a*) In my opinion natural manures can be more profitably used than artificial fertilisers. Artificial fertilisers are most by brought to the Indian markets outside and they cannot be sold cheaply. Besides this, the economic condition of the Indian farmer is not so good as to make use of these costly and artificial fertilisers. The improvement of cattle industry is, in my opinion, the only direction in which we can proceed to maintain fertility of the soil.

So far, in our history, grain selling has meant selling fertility that has been stored up in the past ages, and it has been followed by improverished soils and unprofitable agriculture. On the other hand we find farms in almost every locality in the United States of America and even entire countries can be pointed out where the fertility

of the soil has been vastly increased by livestock farming. The most marked examples of this are concerned with dairy farming.

I have observed that a dairy cow weighing about 1,000 lbs. yields about 12 tons of solid and liquid manure in a year. Under proper conditions from 70—80 per cent of the manure voided by farm animals may be saved and returned to the soil.

(*b*) Fraudulent adulteration of fertilisers can be prevented if they are sold to the farmers through the licensed sellers under the control of the Department of Agriculture.

(*c*) In the first place I will strongly advise farmers to use natural manures If new and improved fertilisers are at all to be used, they should first be used on experimental farms and the result be shown to the farmers. If they see good results from the use of fertiliser, they will naturally be inclined to use them on their farms.

(*d*) I do not know any particular locality where considerable increase in the use of manures has taken place, but so far as I have seen, every farmer knows the value of manures and he tries to obtain as much manure as he can conveniently procure in his village.

(*e*) I do not think the effect of manuring with phosphates, nitrates, sulphate of ammonia and potash manures have properly been investigated in this Province.

(*f*) Education, propaganda are the methods, I would suggest, to discourage the practice of using cowdung as fuel.

QUESTION 11.—CROPS.—(*a*) (i) Condition of existing crops can be well improved by the use of natural manures and by adopting methods of proper crop rotation. The Department of Agriculture should show the methods to the farmers. Irrigation facilities should be widened

(ii) Where irrigation is possible, crops like *alfalfa* (*lasun* grass) should be introduced. This would improve the existing condition of the cattle and maintain soil fertility

(iii) The distribution of seeds to the farmers should be done through the selling agencies (in every tahsil) under the supervision of the Department of Agriculture, and the local bodies, like Local Boards, be encouraged to maintain such seed stores at every tahsil headquarters and supply seed to the farmers of the surrounding area.

(iv) Wild pigs and deer are mostly responsible for the destruction of crops, and although they are killed in large numbers they breed more quickly than they are killed. The Board of Agriculture has, I am told, passed a resolution on the subject to bring about increased destruction of pigs and other wild animals, but it is still under the consideration of the Government of India. The pig is a very hard animal, and is not likely to be destroyed by the slow process of resolutions but by active steps.

Government should be more liberal in granting licenses to the farmers.

(*b*) I have no such crop in view.

(*c*) No.

QUESTION 12.—CULTIVATION.—(i) Though the existing system of tillage is not very satisfactory it has still its own merits. From my personal experience, I have observed that the improvement of existing agricultural implements is more preferable to the introduction of new types I have not seen practically any agricultural operation which was carried on in general farming practice in the Province where greater efficiency could not be obtained by the improvement of the indigenous implements in use Such improvements must be cheap and easily effected in the villages.

QUESTION 13.—CROP PROTECTION, INTERNAL AND EXTERNAL—(i) The efficiency and sufficiency of existing measures for protection of crops from external infection, pests and diseases are far from satisfactory.

(ii) Active action on the part of the department is now desirable.

QUESTION 14.—IMPLEMENTS—(*a*) No.

(*b*) There is an unlimited field for developing trade in agricultural implements if the initial difficulties are surmounted by special measures. Firstly, the villagers are scattered over long distances and it is impossible for the trader to reach them. The second difficulty is financial, mostly the cultivators cannot pay in lump sum the price for implements. They want easy terms for payment in instalments. If the agriculturist is approached and relieved from financial difficulty, he is quite willing to go in for modern implements. Railway companies should also be approached to grant concesstions on agricultural implements.

(*c*) There are some difficulties which manufacturers have to contend with in the production of agricultural implements, but they can be removed. The Provincial Governments should take up this work by guaranteeing the manufacturing firms' orders in bulk

R. B. M. G. DESHPANDE.

for the purchase of implements. Thus there would be manufacture on the largest scale, which means production. Then again, local conditions should be studied to suggest the implements necessary for a particular area, and these should then be standardised and produced on a large scale.

QUESTION 22.—CO-OPERATION.—(*a*) (i) Co-operation is essentially a democratic organisation. It is an embodiment of the principle of self-determination and as such should not be mentored by the strong official hand. Nevertheless, the Indian masses, as they stand, need sympathetic and judicious guidance from above. Whether it be Government officers or the non-officials, they have all to approach the movement in a missionary spirit. For this, it is absolutely necessary that the heads of the Co-operative Department should be Indians. They are expected to know their countrymen better and the latter also will take the former as their own

Secondly, these Government officers should, as far as may be, be drawn from the Agricultural and Industrial Departments, so that alongside with the supply of credit through co-operative organisations, they should be in a position to advise the agriculturist to put his money to best use and utilise his spare hours profitably. Being in touch with agriculture, they will be able to guide the members of the co-operative societies how to take advantage of and utilise improved methods of cultivation, select their seeds and choose their fertilisers Lastly, being associated with the Industrial Department, they will be able to issue instructions to the ignorant members of the societies to turn their spare moments to a better account by taking to farm industries. Similarly, their assistants also should undergo a course of agricultural training. They should not lack in the knowledge of accountancy, economics and banking, and should be drawn as far as possible from the agriculturists

Thirdly, there should be a close co-operation between the four departments of Government—the Agricultural, the Co-operative, the Veterinary and the Industrial, each uniting and supplementing the efforts of the other.

Fourthly, the Government officers of other departments, especially those of Revenue, Excise and Education, should strengthen the hands of the Co-operative Department by making it a point, whenever possible, but without proving a bore to the members of the rural societies, to visit and offer them a few words of advice. The Revenue Department can be of great assistance in composing their differences and bringing the defaulters to book. The Excise Department can help them in getting rid of their addiction to alcohol or liquor, if any Education Department, if sympathetically inclined, can provide for the educational facilities of the children of the agriculturists. To say the least, illiteracy has been the greatest bane of the Indian society, to stamp out which no efforts should be spared. Legislative Councils and the local bodies can go a great length in this direction, but the actual administrative machinery rests in the hands of the Education Department. If the latter is guided by persons who have the country's good at their heart much can be done to improve the lot of the poor agriculturist. Our agriculturists have been easy victims of those who are gifted with better intelligence. They are also by nature a most conservative set of people and unless their vision is broadened by education, they cannot imbibe the ideas of co-operation with the result that the latter ceases to take root. Hence it is that Education Department should be the most active amongst those referred to above and lend all possible co-operation to them.

(ii) The non-official agencies best fitted to promote the growth of this movement are the federal bodies, divisional or provincial. All propagandist and educative part should be entrusted to them, and the Government should not grudge them a reasonable subsidy for their upkeep, even if it were to come from the pockets of the general tax-payer. Obviously the whole of Indian revenue has its last link in the agriculturist's home, and as such every pie that is spent from the general treasury has its reward and justification By hloding courses of studies for the literate agriculturists and others interested in co-operation and rallies at convenient centres, and convening conferences from time to time and publishing tracts on the working of co-operation, co-operative education can be much popularised. The Government for their part should induce the right type of people to join the movement and show them a way to ameliorate the condition of the agriculturists.

(*b*) (i) Our credit societies and, for the matter of that, all primary societies have been so much under the tutelage of external agencies that they are lacking in creative genius. This is the reason why they always depend upon external financial aid. Secondly, the credit facilities are more often than not denied when they are sorely needed. For this many circumstances are responsible, chief among which are, first, inability of the members to undergo the formalities of drawing upon their credit with their financiers, the Central Banks, in rainy season, and secondly, the defective means of communication. In some parts of the country, the land tenure is so faulty that

while the requirements of the agriculturists are as great as those of others more favourably situated, looking to the security of their holdings, the financing bodies are close fisted in satisfying their needs. For this it is necessary that their land revenue system must be changed. Their holdings must be made transferable, and it is then alone that they will be able to command adequate credit. In co-operation, it is no doubt honesty of purpose and prudential habits that are the main sources of credit, but human nature constituted as it is, has its weaknesses and drawbacks, and as such a mortgagable interest in one's holding is sometimes badly needed. Our credit societies are so much accustomed to paternal care and *taccavi* advances that they only take the Central Banks as old friends, *viz*, the *sowcars* in the new garb. To remove this misapprehension education and propaganda are necessary to which a reference has already been made.

The formation of urban banks, especially of Government servants and of public bodies, should be encouraged to enable the needy persons to secure loans at reasonable rates of interest.

(ii) All animal life is composite, and so is that of the agriculturists. Money or credit is not the only sinew of the war An agriculturist produces his crops by the money supplied by Central Banks but that done, he is again at the mercy of the cunning of the *banias*. He does not know how to put his produce to the market. Very often he is being pressed by his creditors for the payment of money borrowed off them and he has to part with his produce before the market is settled or to sell it to the *bania* himself for the price quoted by him. For this, it is absolutely necessary that sale societies must be organised. The experiment has been successfully tried in some of the places in the Bombay Presidency. The Government should take steps to organise these societies at convenient centres in each district. It goes without saying that, in the beginning, their working will have to be supervised by the Government.

(iii) In the money market, the common maxim is that we should but at the cheapest and sell at the dearest, but our agriculturists have often to reverse this order. Credit gives the agriculturists the wherewithal with which to buy his necessaries, but where to buy them profitably is always a besetting question with him. An agriculturist is in need of several things such as seed, fertilisers, machinery, implements, tools, etc., and articles of every day consumption. For this purchase societies must be provided.

Now whether all the three functions detailed above should be combined in one and the same society so that it should be a self-sufficient body is a point on which there is a difference of opinion, but expert advice demands that these different functions should as far as possible be kept apart and not allowed to impede the growth of others

(iv) These societies can be organised and run in areas where irrigation works are in progress and great reservoirs are being sunk We mean to say such an area provides you with a favourable ground. Once these experiments succeed, even a modest village could start a society of its own and carry on its work in the neighbouring villages. Often times we find a group of labourers working together without being conscious of the fact that they are translating the principle of co-operation into action partly. Advantage should be taken of such groups and they should be placed on a proper footing. Unfortunately the Central Provinces has not got such societies, the formation of which should be encouraged.

(v) Aggregation of fragmented holdings is a great desideratum of the present agricultural community. By accretion of time, the Hindu joint family system has given rise to minute sub-divisions of land which have upset all calculations of fruitful agriculture. Punjab co-operators have taken the initiative in the matter, and if their experiments attain a reasonable degree of success, other Provinces should follow suit.

(vi) There is an instance of this kind in this Province. Jalgaon is a taluk town in Buldana district in Berar. The Agricultural Association there purchased improved ploughs and rented them out on a nominal fee. The result was that while nobody had to bear the burden of investing a large amount in the purchase of implements, everybody had the good luck to enjoy the fruitful results of co-operation. Nevertheless, where the use of improved machinery is yet far from commending itself to the acceptance of the average agriculturist, reasons apart, it will be premature to try experiments of this type. In this respect, if at all, it is the Agricultural Department which must have the honour of establishing the claims of modern machinery.

(vii) If joint farming is something different from joint cultivation, then it must be stated that the former has little chance in places where whole of the arable land has been brought under cultivation. These experiments could be tried only in such places where waste land is yet available or the forest land need to be reclaimed.

(viii) Somehow cattle-breeding societies have been a failure in this Province, and we have hardly any information about the same.

R. B. M. G. DESHPANDE.

(ix) Pig-hunting clubs, malaria prevention clubs, village sanitation preservation societies, co-operative stores—these are some of the branches of co-operation which offer a wide field for co-operative activity.

In short, given enthusiastic souls actuated with a warm patriotic feeling and imbued with liberal ideas it is possible to organise the whole countryside co-operatively. Denmark has set a noble example and we should be guided by it, not forgetting at the same time our limitations and disabilities. Unfortunately, the local Co-operative Department is too conservative in this respect Reason might be that the department does not get competent officers, and if it happens to get a few here and there, they do not choose to continue, presumably because of the fact that the department does not offer attractions of executive service. For this it is necessary that men of the Provincial Service possessing long and varied experience should as far as possible, be absorbed in the Co-operative Department.

(*c*) We think that from the experiments made in each of these branches we are not yet in possession of sufficient data to warrant any such piece of legislation.

(*d*) Whether a co-operative society is really so or otherwise depends on the criterion you employ. If punctual repayment of loans were the only standard applied, and it is often applied, many societies, why most of them, would not come up to satisfaction. On the contrary, if the test whether the society is run on co-operative lines or not were applied, some could be declared to have achieved their object. In Berar and Bilaspur districts and for the matter of that in every district of the Province, there are some societies which could be said to have attained their aim but it must be admitted that their number is limited.

Oral Evidence.

30430. *The Chairman* Rao Bahadur Deshpande, you have provided the Commission with a note of the evidence that you desire to give Have you any statement that you wish to make at this stage in amplification of your written statement?—No.

30431. What is your occupation?—I am a malguzar landholder.

30432. From where do you come exactly?—I come from a village 32 miles from Nagpur.

30433. How many acres have you?—More than 2,000 acres.

30434. In one village?—In 22 villages.

30435. Have you a home-farm?—Yes, I have.

30436. Do you cultivate that yourself?—Yes, through my servants.

30437. Have you leased out any of your farm land?—I do not lease out my land generally.

30438. What are the principal crops in your district?—In my village we sow cotton, wheat, *juar*, *tur*, and other pulses, and in some places also rice.

30439. Are any of your lands irrigated?—They are irrigated by my own tanks not by Government tanks.

30440. Would you describe in a little more detail the system of irrigation you have adopted? How is the water stored?—We collect water in the rainy season.

30441. Have you any wells?—We have wells only for gardening purposes, not for irrigation purposes.

30442. Are you growing any sugarcane?—Not much, because generally sugarcane is damaged by pigs and jackals.

30443. Turning to the substance of your note of evidence, on the first page you recommend the formation of a Provincial Research Committee at Nagpur under the chairmanship of the Director of Agriculture. How exactly would you suggest that the committee should be constituted?—The committee should consist of the Director of Agriculture, some non-officials, and experts on the different subjects.

30444. You suggest that the committee should be charged with the administration of a permanent research fund?—Yes.

30445. How do you suggest that that fund should be acquired?—Government should supply it.

30446. Would you appeal to the public?—I do not think that the public will be able to give sufficient funds for the purpose of research work.

30447. Do you not think that important landholders might regard it as a privilege to contribute to a fund of that sort?—That fund will not be much utilised for their requirements. They will voluntarily contribute if they find out that the research is profitable to their cultivation.

30448 I gather that it is your view that on the whole and having regard to the funds at its disposal, the Agricultural Department is at this moment discharging its duties satisfactorily?—They are discharging their duties satisfactorily, but not to the satisfaction of the public, because they have no funds at all.

30449. And I judge that, in your view, the weak spot in the existing system is the demonstration side of the work?—Yes.

30450. And in particular the qualifications of the men engaged in demonstration and propaganda amongst the cultivators?—Yes.

30451. Is that shortcoming due, do you think, to the class and calibre of men recruited for the purpose or is it due to their want of training?—We have not got sufficient men at present.

30452. But the men you have got, have they sufficient training?—I think so.

30453. On page 297, you advocate the establishment of agricultural clubs in vernacular and Anglo-vernacular schools. I do not quite understand what you mean by agricultural clubs?—The students who take agriculture in the schools should form themselves into a club and under the direction of their teachers should have training in their own place or in any central place where the Government has got its farms; that is what I mean

30454. So that you would make agriculture a non-compulsory subject and a non-examination subject, and you would have these agricultural clubs in order that those boys anxious to take up agriculture should in their leisure acquire a certain knowledge in agriculture?—I think it should be an optional subject in place of some of the subjects at present taught in the high schools.

30455 Have you anything to tell the Commission about adult education which you have not set down in your note? Have you any experience of experiments in adult education in your district?—The farmers who are grown up should be trained by demonstrators, they should be allowed to go to the Government farms and see what the agricultural people are doing; that sort of education will be sufficient for them at present.

30456 Do you think you see any increasing demand for education amongst cultivators in your district?—Yes; they are keen about it.

30457. Are you confident on that point?—Yes.

30458. Do you think there is any sign that the cultivators are willing to pay for such education?—About payment I doubt very much; but they will come forward if they are given free instruction as regards cultivation, manure and other things and they will follow the instruction well

30459. You point out the need for better communications, who do you suggest should pay for those?—Government and the District Councils.

30460. Do you distinguish in your mind between Government and the tax-payer in the matter of finding money for these purposes?—The roads maintained by the District Councils are paid for by them.

30461. You think District Councils have laid on them duties which they cannot discharge through lack of funds?—Yes, that is the difficulty in Nagpur at least.

30462. Are you a member of your District Board?—Yes.

30463 Is there a demand for better communications?—Yes.

30464. And for further education?—Yes, but owing to want of funds the District Board cannot undertake all these things.

30465. Which is the most vocal and most active, the demand for better education or the demand for better roads? The demand for better educatino.

30466. That comes first in the eyes of the local authorities?—Yes.

30467. You give us some interesting figures on the question of financing agriculture on the land mortgage system and also on the co-operative movement. What experience have you yourself had in these two fields ?—In the co-operative movement I was the Secretary of the Central Bank and at present I am one of the Directors of the Nagpur Co-operative Central Bank; I am also the Managing Director of the Provincial Bank here in Nagpur.

30468 Of the Apex Bank ?—Yes.

30469. I do not quite gather from your note whether you suggest that a credit founded on land mortgage shou'd be given entirely through the co-operative movement. Do you suggest that the land mortgage should work entirely through the co-operative societies ?—Through the Apex Bank and the Apex Bank should advance to the Central Banks.

30470. What organisation do you suggest should come in direct contact with the cultivator ?—The Central Bank; generally the societies come in contact with the cultivator, not with the Central Bank directly.

30471. The primary society ?—Yes.

30472. I think that the experience of this Province suggests that it is very necessary that the primary societies should discharge their duties properly ?—Yes; they are still illiterate, and it is very difficult for them to manage their own accounts, because they cannot write them.

30473. They must be encouraged to take as much interest in their own affairs as possible ?—Yes.

30474. Does this scheme for a land mortgage bank system set out by you embody your own ideal or is it some scheme which is under consideration at this moment ?—I attended the Provincial Conferences at Bombay and Poona and there they have got this scheme and we are also thinking of opening the same here.

30475. Is it your view that a proportion of the short-term loans taken out from the primary credit societies by cultivators are, in fact, applied to objects which are not short-term, but are, in fact, improvements and ought to be financed on long-term loans ?—Short-term loans are generally applied for their own current needs. The Central Banks generally advance loans to societies for their own needs.

39476. Now, in your experience of the management of the Central Bank, were you satisfied with the apparatus at your disposal for examining the assets and liabilities of applicants for loans from credit societies ?—At present we are doing it with the agency we have got. We have got only *sirpanches* and secretaries who generally go through the assets and liabilities of the members and forward the applications to the Central Banks.

30477. And do you think that that plan gives the Central Bank an opportunity of urging the suitability of the applicant ?—We have got one material benefit. We get the audit notes of the Government Auditors and we compare the audit notes and the application of the member and then we decide whether we can advance the loan or not. Generally, Central Banks scrutinise these applications.

30478. Do you come into close contact with the cultivators on your estates ?—Yes.

30479. How far from Nagpur is your property ?—In Wardha district; there I have got two or three villages six miles from the Wardha town.

30480. How far is that from Nagpur ?—More than 50 miles.

30481. Would you tell the Commission what period of the year you usually spend on your own lands ?—I generally visit my villages once a month.

30482. Do you reside on your own estates ?—I have got my house there, but I generally reside at Nagpur.

30483. You mitigate the disadvantages of absenteeism by repeated visits ?—I could not be considered an absentee landholder because I generally know my land and everything connected with it.

30484. Under what system of tenancy do cultivators on your lands hold their cultivating rights ? Is it absolute occupancy ?—Some hold on absolute occupancy, some are *malik-makbuza*. The ordinary rights have been removed according to the

new Settlement Act. We have got three sorts of tenants: *malik-makbuza*, absolute occupancy tenants and occupancy tenants.

30485. Have you villages where the fragmentation of holdings is a serious bar to agricultural efficiency ?—No.

30486. Do you consider the existence of these three separate systems of tenancy right is, in any way, making difficult the management of your estates ?—No.

30487. Have you any primary credit societies at work on your own lands in your own villages ?—There were some, but now they have been cancelled

30488. So that in fact in all your 22 villages you have no credit societies ?—No; because we advance them at the same rate at which the banks also advance them.

30489. Who is we ?—I myself, because I have also got a moneylending business.

30490. Do you lend money to your cultivators at the same rate at which the banks also advance it ? Which bank ? Is it your own bank ?—The Nagpur Central Bank; we are now comparing the co operative banks

3049 . It is the same thing as saying that it is the rate at which the primary credit societies lend money. Is it 12 per cent ?—At times I lend at 9 per cent; it depends on the credit of the tenant.

30491 Have you ever taken steps to encourage the spread of the co-operative movement on your own estates ?—No.

30493. Do you carry out any research or demonstration in collaboration with the Agricultural Department ?—No, I do not carry out any demonstration, but as a member of the Board of Agriculture I carry out their instructions as regards seed and implements.

30494 Is that carried out in close touch with the department ?—Yes In the Wardha district the Agricultural Assistant generally comes to my village and gives instructions.

30495. Have you any arrangements with the Agricultural Department for growing and distributing improved seed ?—In the beginning I took seed from the Agricultural Department, but now I have got my own seed.

30496. And do you in fact distribute seed of improved varieties ?—Yes, to my tenants.

30497. How do you finance that ? Do you finance that as a loan to your tenants ?—I advance seed and take cotton in return. Supposing I advance four *khandis* of seed, I get two *khandis* of cotton in return

30498. What about the condition of the cattle in your villages ? Are you satisfied with that ?—No, they are very poor. We cannot get sufficient bullocks.

30499. What about your local breeds ? Are you satisfied with the breeding ?—I am satisfied with the breeding, but they are not strong enough to pull the ploughs.

30500. Why are they not strong enough ?—That is due to the grazing rules.

30501. And not to the breeding ?—We have got bulls from the Government but we are not getting good bullocks for our cultivation. We get only small pairs worth about Rs. 200 I do not know why.

30502. Have you seen any of the experiments in preserving fodder that are being carried out by the Agricultural Department at various stations ? I am thinking of silage making ?—I have, but I am not following that in my own villages

30503. Why not ?—Their system seems to be rather different because they keep fodder in a ditch and they cover it up with mud. Our village people have not been sufficiently educated in that; they say that that process would spoil their fodder.

30504. But do you not know that things would be much better if that were done ?—I have got no faith and confidence in it.

30505. *The Raja of Parlakimedi*: You say, at page 297, that the recruitment of boys to agricultural study should not be confined entirely to the agricultural classes. Are you sure that boys of other classes will take to the study of agriculture if you do not hold out to them a promise of Government employment or a grant of land ?—In that case perhaps they will not; I am not sure how many appointments can be given to them.

R. B. M. G. DESHPANDE.

30506. Do you not think that it is better to restrict it to agriculturists who will be benefited by the study of improved methods and who would go back and improve their land?—Yes, if a sufficient number come forward; but my experience is that we are not getting agriculturists to come to the schools. Very few agriculturists send their boys to school.

30507 And do these so-called educated people come to the rescue of these people to teach the improved methods of agriculture?—Those who have sufficient land and cultivation generally go back to their respective villages and make improvements in their lands. But those who have got some 10 or 12 acres generally stick to Government service.

30508. Are you for modifying your proposal that people who possess a certain amount of land only should be recruited?—I am not sure about that.

30509. *Sir James MacKenna* In paragraph 1 of your memorandum on page 296 you say: "The present organisation of research work in this Province, judged by it's results, is in no way unsatisfactory" But although you give this qualified approval to the research work of the department, I infer from your subsequent remarks that you are not quite satisfied with the department on its demonstration side?—Not because they are not doing any work, but because they have not got sufficient staff or sufficient money.

30510. On page 297 you say, "Those that are deputed on the work should be men of courteous habits and should mix with the masses as if they were one of themselves" On page 298 you say, "Indian farmers have shown willingness and even keenness in adopting improvements which promise to pay them, but there is no co operation between them and the Department of Agriculture on account of the autocratic tendencies of the latter . . . Courtesy on the part of Government officials is the only method I would suggest whereby cultivators may be induced to adopt expert advice." Again on page 298 you say, "From my point of view, the Agricultural and Veterinary Services are far from satisfactory. The officials of these departments do not realise that thay are the servants of the people and do not give the farmers the full benefit of their services Supervising officers of these departments should, therefore, impress upon their subordinates that they are public servants and should discharge their duties in the interest of the public". What is the reason for these pessimistic remarks?—What I meant is this. I do not say that the Agricultural Department are not doing their work, but it is on very rare occasions that they go and see the tenants themselves Therefore they never come in contact with the tenants. In that way I say it is not satisfactory.

30511. When you say that the supervising officers of these departments should impress upon their subordinates that they are public servants and should discharge their duties in the interests of the public, are you referring to the demonstrating staff or the superior staff?—I am referring to the demonstration staff.

30512. You think they do not get sufficiently into touch with the people?—Never, because they have not got sufficient staff. One man in a tahsil where there are 500 villages is entirely insufficient

30513. So that you think Deputy Directors should inculcate in the minds of their subordinate staff the principles that you have here enunciated?—Yes.

30514. On page 304 you say "Whether a co-operative society is really so or otherwise depends on the criterion you employ. If punctual repayment of loans were the only standard applied, and it is often applied, many societies, why most of them, would not come up to satisfaction On the contrary if the test whether the society is run on co-operative lines or not were applied, some could be declared to have achieved theirlobject." As a prominent co-operator, which criterion would you apply, co-operative enthusiasm or business instinct?—I think punctuality should not be the only criterion because punctual payments depend on the harvest. If the members have not had a good harvest, it is impossible for them to make repayment on the due date.

30515. Then you would prefer co-operative enthusiasm?—Yes, thrift, honesty etc.

30516. Honesty apparently comes second?—Yes.

30517. *Prof Gangulee*: You are a member of the Board of Agriculture?—Yes.

30518. How long have you been a member?—About ten or twelve years.

30519. You stay most of the time in the Nagpur city, do you not?—Yes

30520. Have you paid frequent visits to see the research work done by the Institute here?—At times, not frequently, and only with reference to cotton.

30521. You are very keen on cotton?—Yes.

30522. Have you paid a visit to the Agricultural College?—Yes.

30523. That is to say you are in touch with the work that is being done here?—Yes.

30524. Do you know any particular item of research work that is being done here at the present moment?—I only see the cotton.

30525. You do not know the type of research work being done at the Research Institute here?—No.

30526. So that when you say that the present organisation of research work is in no way unsatisfactory, you simply base your remarks on impressions?—No, as regards cotton I give my own view. As regards cotton, the department is doing its best. We have got good varieties of cotton at present.

30527. On page 297 you say, "The tendency of bringing research workers from outside should at once be checked." On what do you base your view?—I only say we must try to Indianise the services; that is my object. We must do our best to have our own people educated in research work.

30528. Have you had occasions to compare the efficiency of Indians with that of Europeans?—At present Indians are not given any chance in research work, most of the people are brought from outside.

30529. On page 296 you say that the Agricultural Department should encourage and, if necessary, subsidise non-official gentlemen who have facilities and are desirous of conducting small schemes of research work. Have you any particular scheme in mind?—No. I have got no scheme.

30530. Then you want patriotism on payment. On page 297 you make reference to the uneconomic condition of farming. What is the total acreage of your home-farm?—I have stated that it is more than 2,000 acres.

30531. Your crop is chiefly cotton?—Cotton, wheat and rice.

30532. What profit do you get from your cotton?—That depends upon the harvest. I cannot say exactly what profit I get to-day.

30533. When you speak of the uneconomic condition of farming, what have you in mind; is it that the profit per acre is so small?—I say that it does not pay the agriculturist.

30534. Does it not pay you?—No.

30535. But still you are going on with it?—Yes. Because there is no other business; that is the only reason.

30536. Have you any suggestion as to how to make farming pay?—Unless Government comes to the help of the agriculturist and gives the money required at a low rate of interest, there can be no improvement; because we generally have to borrow from the *sowcar*.

30537. Surely money is not a handicap in your case?—No, but unless the agriculturist gets the money at a cheaper rate of interest I do not see how he can prosper.

30538. On page 297 you say, "I do not see any movement for improving the technical knowledge of students who have studied agriculture. Those who are already in Government service actually carry out their orders without even utilising the knowledge they have gained while students". Could you amplify that a little?—I say they merely carry out orders.

30539. Who are the students already in Government service of whom you speak?—Agricultural Assistants and demonstrators.

30540. They simply carry out the orders and they do not utilise knowledge that they have gained?—Yes.

30541. Have you any specific case in mind?—No, but generally I find that. In the villages they generally carry out the orders given by the high officials.

30542. On page 302 you say, "The Government for their part should induce the right type of people to join the movement and show them a way to ameliorate the condition of the agriculturists" In reply to the Chairman you said that there are no primary societies in the 22 villages under you. I take it that you are a very influential malguzar and a Rao Bahadur. What suggestions have you to make when you say that Government should induce the right type of people to join the movement?—I mean those who have really got a knowledge of co-operation.

30543. I suppose you have knowledge of co-operation?—I began from the beginning, so that I profess to have some knowledge of co-operation.

30544. And yet you have no primary societies in your 22 villages?—I have already explained to the Chairman why societies have not developed.

30545. You are a member of the Local Board?—Yes.

30546. You say there is a demand for education?—Yes.

30547. Are there any schools run by you personally in these 22 villages?—There are no schools managed by the malguzars, they are run by the District Councils. We help them.

30548. How many primary schools are there in your 22 villages?—I think in the Wardha district where I have got villages there are 4 or 5 schools. I am only a member of the Local Board.

30549. *Mr. Kamat:* You complain in your memorandum of the amount of money spent on research as compared with the amount of money spent on propaganda and say that they are disproportionate. Further on you say that the provision of funds for propaganda amongst the cultivators is almost ludicrously inadequate. Will you please illustrate these statements by figures if you can remember them. How much is spent on research and how much on propaganda?—I cannot give you the figures exactly, but I will say that the staff they have engaged for propaganda work is not sufficient to educate the agriculturists. That is what I mean. I do not know exactly how much they are spending on research work, but from the knowledge I have I find that they have not got sufficient staff for propaganda. Therefore I say that the amount spent on propaganda work is insufficient.

30550. When you say that these two things are disproportionate, I would like to ask you whether it is one-fifth or one tenth?—I cannot give you the exact figure.

30551. In another place you say that the system of land revenue prevailing in this Province should be changed, could you amplify that a little?—In the case of the co-operative movement, I find that the members of a society do not get sufficient money because they have no transferable holdings.

30552. And you therefore think that your land tenure system is faulty?—That is what I say.

30553. Is that the general feeling among the malguzars, that this system ought to be changed?—There is no such feeling among them.

30554. That is your personal opinion?—Yes. In the case of the co-operative movement, the land will never go into the hands of the *sowcar* or anybody else.

30555. Is this feeling growing day by day amongst the malguzars of the Central Provinces?—No; the Central Provinces malguzars are not very keen in giving transferable rights to the tenants.

30556. *Sir Henry Lawrence:* But you advocate it all the same?—Yes In the case of co-operative societies, I say that members who are malguzari tenants should be allowed to lease out their lands to the society for more than one year, but according to our tenancy laws they cannot lease out the land for more than one year.

30557. *Sir S. M. Chitnavis:* On page 296, you say, "There are at present only two agricultural schools in this Province". Where are they situated?—One is in Powerkhera and the other at Chandkhuri.

30558. Is not the school at Chandkhuri closed?—When I visited it, it was not closed; at present I do not know.

30559. You have visited the place?—I visited it along with Dr. Clouston.

30560. You advocate the establishment of agricultural clubs in vernacular and Anglo-vernacular schools. What is the age of the boys attending vernacular schools?—I say it should be for the 5th, 6th and 7th standards of the vernacular schools.

30561. Not for vernacular primary schools ?—No ; for the higher vernacular standards, the 5th, 6th and 7th.

30562. You want these clubs in middle schools ?—Yes.

30563. How many of them are there in the Province ?—I want to introduce this system ; I do not know how many there are at present ; I want to have the clubs with agriculture as the optional subject in these schools.

30564. On page 297 you say that the general atmosphere, even of primary schools should be agricultural. In what way would you make it agricultural ?—I mean that students going from primary to normal schools should have agriculture as an optional subject.

30565. You want it for students going from a primary school to a normal school and in the normal schools they would have agriculture as an optional subject ?—Yes

30566. Not in primary schools ?— No.

30567. Have you visited the Powarkhera Agricultural School and studied the curriculum there at present ? —I have not visited it recently.

30568. You advocate that the students should be taught well-making, working of boring machines and tractor driving ?—That is for the education of adults.

30569. You stated that there was keenness on the part of the villagers for education ?—Yes.

30570. Is it not the practice in this Province that the school master has to go round every morning to the houses and bring the boys to the school, and that a great deal of his time is spent in this way?—At present, I do not think he is required to do that. An absentee landlord will not have any idea of what is going on in the villages. I know that generally the *kotwals* do the duty of collecting the boys.

30571. My experience as a District Officer is that the *kotwals* nowadays do not go round to bring the boys to school ; the village masters have to go round and bring the boys to school every morning ?—I have got no idea about that ; if the school master has to do it, there will be no education for the boys.

They teach for two or three hours in the afternoon.

30572. You said that you gave 4 *khandis* of cotton seed and took 2 *khandis* of cotton. What is the difference in the prices ?—It depends on the prices ; suppose the price of cotton is Rs. 50 and the price of cotton seed Rs. 25 a *khandi*, then you must calculate according to those prices. You cannot say exactly what will be the price and the profit.

30573. Do you do any grain lending as well ?—Yes.

30574. What is the usual rate ?—It is *sawai* ; that is the usual custom in th villages.

30575. *Prof. Gangulee* : What is the rate ?—25 per cent ; that is the *mahajan* system.

30576. *Sir S, M. Chitnavis* : On page 300, you say, " So far, in our history, grain selling has meant selling fertility that has been stored up in the past ages ". Can you explain what you mean by that ?—That is as regards fertilisers. I say that if you keep more cattle, you will have sufficient manure for improving the land.

30577. Have not the people got a sufficient number of cattle ?—No ; they have not got sufficient manure even , that is the reason why agriculturists generally suffer.

30578. Is not that due to the use of cowdung for fuel ?—Not in the Central Provinces. In Berar, I think they are using cowdung for fuel.

30579. On page 301, you say that Local Boards should be encouraged to maintain seed stores. Have you not got Agricultural Associations and Seed Unions which maintain seed stores ?—If I am right, the gricultural Associations are in existence only in name , no meetings are held, and nothing is done about seeds.

30580. Have you not seen them in Berar and in the north of the district, at Sehora and other places ?—No. I am speaking of Nagpur.

30581. You want Government officers of the Revenue and other departments to co operate in the matter of agriculture and co-operative work and things of that kind. Were not they doing it in the past, and have not they discontinued it owing to the

attitude of the people towards their work ?—So far as my knowledge of the Nagpur Central Bank is concerned, I do not think they have given any help either in its organisation or anything else ; it is all done by non-officials.

30582. You say, "Given enthusiastic souls actuated with a warm patriotic feeling and imbued with liberal ideas, it is possible to oraganise the whole countryside co-operatively". But you go on to say, "Unfortunately, the local Co-operative Department is too conservative in this respect". Is it that they do not allow any of these enthusiasts to come into the movement ?—I do not say th t they do not admit them ; hey do not come.

30583. Is it due to the fault of the Co-operative Department, or is it the fault of the people that they do not come and take part in the movement ? What methods would you employ for encouraging them to come and take part in this movement ?—We cannot give them any allowance to induce them to come ; it is their option ; if they come, they are welcome.

30584. The Co-operative Department does not discourage them from coming ?—No. You know it, much better than I do because you are Chairman of one of the Central Banks.

30585. *Sir Henry Lawrence* : You spoke of the want of funds of the Local Boards. Do they receive any subvention from provincial revenues ?—They do.

30586. To what extent ?—I think the cesses which the Government collects from the malguzars for education and other purposes are transferred to Local Boards.

30587. There is an additional cess on malguzars ?—Yes.

30588. How is it levied ?—It is levied, but I do not know exactly what the amount is. Some cess like the educational cess is levied.

30589. What is the rate ?—I do not exactly know, but I think it is half an anna in the rupee.

30590. Do you not pay it ?—I pay it, but I do not know the exact rate ; I think the rate is half an anna or 1 anna in the rupee.

30591. When was that introduced ?—Long ago.

30592. There has been no new addition to the rates on malguzars ?—No, it is not a new cess.

30593. Does the Local Board levy a special educational cess ?—No ; they have been authorised to do it, but they have not done so up till now.

30594. Under what law have they been authorised to levy this additional cess ?—According to the Local Self-Government Act.

30595. In what year ?—About 1923, I think.

30596. That is specifically for the purpose of introducing compulsory education ?—For compulsory education and other things also, because up till now there was no compulsory education cess ; now they have allowed them to levy market dues and also other dues ; but the Nagpur District Council has not undertaken to do that up till now.

30597. What is the local fund cess which you now levy ?—I cannot give you the exact figure.

30598. Is it an anna in the rupee ?—I think it is 1 anna in the rupee, collected from the malguzars.

30599. And the Local Board has the power of raising that 1 anna to 2 annas ?—The Local Boards have got no powers, but according to the Act, if they want to do so they can collect ; but they cannot raise it to more than the Act allows.

30600. Will you explain the point further ?—The Local Boards have got no power to raise the cess fixed. As regards market dues and things of that kind, they can increase them, but as regards the cess which the Government hands over to the Local Board, I think the District Council has got no power to increase it.

Mr. Wills : The local bodies can impose a special cess under the Local Self-Government Act for purposes of education.

30601. *Sir Henry Lawrence* : What is the amount of that cess which they impose ?—It is hardly ever imposed ; it has not been done in Nagpur.

30602. If the Local Board desired to have some more revenue, they have the power to impose it?—Yes, they can get more income by that means, but they are not willing to do so; I cannot say why.

30603. Has it ever been discussed in your presence?—No.

30604. *Sir Ganga Ram*: Are you in service?—No; I am a malguzar.

30605. But a man in service can be a malguzar. How much revenue do you pay?—I pay more than Rs. 5,000 as land revenue.

30606. Are you interested in any industries?—No.

30607. Your chief source of income is land?—Yes.

30608. But did you not say that land does not pay?—Land and moneylending are the sources of my income; land does not pay.

30609. You advocate boys going in for agricultural education; with what view? To go in for farming or for taking up service?—My chief aim is that they should improve their own farming.

30610. Is there any instance here where a boy has done that?—There are a few such cases.

30611. They did so after getting a degree from the Agricultural College?—Yes. When they have enough land they do so, but if there are students with only 20 to 25 acres of land they go in for service.

30612. Your land is unirrigated, except what you irrigate yourself?—Yes.

30613. What is the gross value of the produce of your land?—I cannot give you the figure.

30614. Can you give me the figure per acre?—As regards rice land, I find that I cannot get more than 5 or 6 *khandis* of paddy per acre.

30615. Can you give the average gross produce per area of 100 or 100 acres?—I cannot give you the exact figure.

30616. How much is a *khandi*?—It is 400 lbs.

30617. You said that you gave 4 *khandis* of seed and took 2 *khandis* of cotton?—Yes.

30618. The seed does not produce only double its amount of cotton. You only want 4 or 5 seers of seed per acre?—5 or 6 seers; that depends on the nature of the soil.

30619. What is the maximum?—6 seers.

30620. How much cotton will one acre of land produce?—One *khandi* if the soil is good enough.

30621. That is how many seers?—14 seers make one maund and 28 maunds make one *khandi*.

30622. You give them 2 *khandis* of seed and take 4 *khandis* of cotton?—No. Suppose I advance two *khandis* of cotton seed; I take in return for my seed one *khandi* of cotton; that is what I mean; that is the practice prevailing in this locality.

30623. You advocate a land mortgage system?—Yes.

30624. You think they have sufficient produce to repay the amount and foreclose the mortgage?—Yes.

30625. With interest at the rate of 9 per cent per annum?—Yes; suppose the land is mortgaged for Rs. 1,000, then they will repay in instalments.

30626. In how many years?—In twenty years; that is what I have suggested.

30627. With interest at 9 per cent?—No; that is too high

30628. What do you advocate then?—6 per cent; they must get it at that rate.

30629. From whom?—From the banks. At present the co-operative banks are advancing money to the societies at the rate of 12 per cent.

30630. And you say that they should give to the cultivator at the rate of 6 per cent ?—In the case of land mortgage banks the big cultivators are not getting sufficient money from the Central Banks; they must get a sufficient amount at the rate of 6 or 7 per cent.

30631. *Sir Thomas Middleton*: You said that you take an interest in the field work of the department on cotton. What form did that interest take?—I do not follow your question.

30632. You have been watching what the department has been doing in introducing the different varieties of cotton ?—Yes.

30633. Do you think the varieties introduced have been improvements ?—Yes. At present we have got here *roseum* cotton; that is a new variety altogether which was not introduced before.

30634. Do you think that is a good variety ?—It was a good cotton some years ago. But during the last few years of heavy rainfall it is affected by wilt, so the agriculturist hesitates to use that variety.

30635. Are any good varieties of cotton being introduced at present ?—No; there is nothing at present to beat *roseum* cotton. Government are now trying other varieties.

30636. It has not yet come into vogue ?—Of late years, on account of the rainfall the plants are affected by wilt

30637. You have given us a full account of the working of the Central Provinces and Berar Provincial Co-operative Bank; when was that bank established ?—Three years ago.

30638. Has this system of advancing money on mortgage been long in operation ?—No, I have suggested a new scheme, a land mortgage scheme, we have not introduced it till now.

30639. I am talking about your Akola scheme. You say "the loans are made payable during the course of sixteen years by equal annual instalments of 15¼ per cent ?— Yes.

30640. Now who is the Governor of the Federation to whom the principal is paid ?—Every three years the Governor is changed; in the beginning the Registrar was the Governor; Rao Bahadur Kelkar was the next Governor.

30641. But the money must remain somewhere though the Governors change ?—Yes; it remains with the Governor of the Federation.

30642. The money is invested in the name of the Governor and so there is some profit from that ?—Yes.

30643. 1 per cent is taken by the Akola Bank and 8 per cent goes to the Provincial Bank ?—Yes.

30644. In actual working the Akola Bank finances these transactions on a 1 per cent margin ?—Yes.

30645. What return does the Federation make for the profit it gets ?—They educate the society members.

30646. Propaganda work ?—Yes.

30647. You criticise this scheme yourself because you say: "this 9 per cent rate is payable for all the six years on the original amount and not on the balance outstanding and hence it is excessive" ?—Yes.

30648. This method of repayment must have been carefully thought out. I suppose the object is to get the cultivator to know exactly what amount he has to repay every year ?—Yes; that is generally done because they have got their *khata* and in the *khata* all the repayments are set out. There it is shown that in the first year such an amount with so much interest is taken, in the second year so much and so on.

30649. Why do you think this system is objectionable ?—I do not say the system is objectionable.

30650. But you say: "This 9 per cent rate is payable for all the six years on the original amount and not on the balance outstanding, and hence it is excessive ?—I say the interest is excessive; my complaint generally is about the rate of interest.

30651. If calculated on balances you would require a rate of something like 12 per cent and I do not see that there would be any substantial advantage from the bank's point of view or from the cultivator's ?—Yes.

30652. There is one thing which I do not understand in your note. You yourself are a very enthusiastic co-operator and you are presumably doing all you can to promote these primary credit societies ?—Yes.

30653 And you are also doing a private business in moneylending ?—Yes.

30654. Is it your view that there is a class of business for which the credit society is unsuited and that the private moneylender is better suited than the credit society would be for certain kinds of loans ?—That depends upon the nature of the private individual. If a *sowcar* or a private individual is a good one his customers will be rather pleased with him.

30655. But obviously your view is that however much credit societies may increase in the future there will still be necessity for the private moneylender ?—Yes; without him it is impossible to get on because the Central Banks have not sufficient money to meet the demands of the societies

30656. It is obviously impossible at present ; but you are such an enthusiastic co-operator that you should think of a time when these societies would meet the whole demand ?—Yes ; the time will come.

30657. That you think will be better than private moneylending ?—Yes.

30658. *Dr. Hyder* : You have just told us that you are a malguzar paying land revenue of about Rs. 5,000 and you carry on this side line of moneylending also. Do you pay income-tax?—Yes.

30659. How much ?—Rs. 2,500.

30660. You said just now that you carry on this side line of moneylending chiefly in the form of advancing seed and you advance the cultivators four *khandis* of cotton seed and recover two *khandis* of cotton ?—Yes.

30661. What is the value in money of this item of four *khandis* of cotton seed ? What was it last year, for instance ?—Last year it was Rs. 20 or Rs. 30 per *khandi* ; but my seed is altogether different.

30662. We shall make proper allowance for the quality of your seed ?—Government sells at the rate of Rs. 50 per *khandi*.

30663. What is the price of your cotton seed per *khandi* ?—You may take it at Rs. 40.

30664. Now you advance four *khandis* of seed and you recover two *khandis* of cotton, do you not ?—Yes.

30665. The price per *khandi* of cotton seed, let us take it at from Rs. 28 to Rs. 40, so that the price of four *khandis* of it would be from Rs. 4×28 to Rs. 4×40. —Yes.

30666. And for this you get in return two *khandis* of cotton ?—Yes.

30667. Now what was the price last year of cotton ?—Rs. 115 per *khandi*.

30668. That is to say you recover Rs. 230 and the advance was Rs. 112 to Rs. 160. And you recover it after how many months?—I am not sure about that whether we shall be able to recover the money or not. But I should say that it would generally be recovered within six or eight months.

30669. What is the interval between the sowing period and the harvesting period ?—Eight months.

30670. Does it not occur to you as a co-operator that this is a profitable business ?—Yes, it does. But we have to keep our *kamdars* and servants and agents and other paraphernalia.

30671. Then I am not wrong in saying that you advance Rs. 112 and recover Rs. 230 ?—No, that is always the case in the moneylending business.

30672. You want education, do you not, in the Central Provinces ?—Yes.

30673. And you want money for research ?—Yes.

30674. And I think you also want money for co-operation ?—Yes.

30675. Suppose the Central Provinces Government were absolutely bankrupt and these things had to be provided by the Central Provinces Government, what in your opinion would be the best way of raising the funds ? Would you levy a tax or a cess ?—I do not think that there is any need for taxation at present ; I am not in favour of taxation.

30676. Would you not favour the idea of a small addition, say an anna or two, on agricultural incomes ?—Already they are heavily overburdened with taxes ; I am not in favour of that at all.

30677. You have not given the causes on account of which the people get into debt. I was wondering whether in the Central Provinces the heavy exactions on account of *nazarana* was also not a potent factor ? Is that familiar to you ?—Yes, we take *nazarana*.

30678. Does the cultivator get into debt because he has to pay heavy *nazarana* and sometimes he might have to part with his land because he is unable to pay *nazarana* ?—I have not experienced such cases where on account of *nazarana* they are heavily indebted.

(The witness withdrew.)

RAO SAHIB T. S. KORDE, M.L.C., Landlord, Murtizapur, Akola.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(*a*) (*i*) India must be split up into groups according to soil and climate. A separate institute should be started for each Province with different branches for different groups. They should go from the traditional known methods and base improvements thereon. India is mainly an agricultural country and has developed that industry since centuries. The soils should be analysed, the deficiencies in each kind be found out and their bearings on the production of crops be suggested to the people. The researches should be practically local and should not be lost sight of. The varying conditions of soil and climate even in one group manifesting differences in the same kind of crop, should be scientifically tried, proved and promulgated.

(*ii*) Medical treatment of animals, as of human beings, has been ancient in India. It is true, that it cannot be explained on modern lines of treatment, but as has now been accepted in the case of human medicines, the old medicines deserve to be brought to a systematic stage. There are often instances, when Veterinary Assistants fail to cure their patients by their elaborate and costly methods, when a man conversant with old and practically free medicines, *e.g.*, herbs, diagnoses and cures the animals marvellously quickly. This is no magic. Herbs, etc., have their powers and some men keeping cattle inherit the knowledge from previous generations. It is no fault of theirs if they have not studied the science, if there was any, but, admittedly there are no books available on it and it has to be explained. For this purpose, all the information of various remedies and methods should be collected, analysed and systematised. Defects found should be made up by the scientific inventions of other schools. This is only an imitation of the system adopted for human beings, as is known in Bengal and Madras Presidencies. I say this, not with a prejudice regarding outside methods, but chiefly in view of the existence of common and cheap methods.

QUESTION 2.—AGRICULTURAL EDUCATION.—There are no broadcast agricultural schools in the Province. The replies to the questions cannot therefore be given categorically. I confine myself to Berar only. The agriculturist class is admittedly advanced and intelligent and wants only coaching up, in the use of the most refined, up to date and established methods and implements. These must be within the easy reach of an average agriculturist in regard to cost and technical construction and must be tried on the soil and climate and proved to be beneficial to the agriculturist's entire satisfaction, otherwise he will not risk it. The present village schools are, in fact, only educational institutions, more for inspiring educational tendencies than technical ones. Agricultural schools, proper, available for the masses would be too costly to be thought of, at present, but a beginning can be made by confining the teachers to the agricultural class with special training of methods, etc., as referred to above, which methods should be a main factor of the curriculum so as to induce the youth to appreciate it in a practical manner. The local body controlling the school should get advice and help from the Agricultural Department in this respect, as they otherwise do, from Educational Department. The expenditure would not very materially increase. Model agricultural farms, showing the growth of crops of the particular tract under modern methods, which can be within the reach of the ordinary man are being opened at some centres, but very slowly, and not on quite practical lines as mentioned above. They should be improved and spread till there is one at every place of a big bazaar along the main road. The students of agriculture take up the subject, more for service than for agriculture proper, and know the theories without sufficient practical knowledge, experience or use. Practical training means also nature study.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—Demonstration and Propaganda work should be based on the lines indicated above, *i.e.*, applicable to the locality within reach of the ordinary agriculturist's education and purse and after satisfactory trial by the research staff as stated above.

QUESTION 4.—ADMINISTRATION.—(*a*) The department should be Provincial as the questions are more Provincial than Imperial; there should be co-ordination between different Provinces on common subjects and only All-India questions, *e.g.*, transport

facilities, customs, and like these, should remain with the Government of India, whose function should be mainly advisory.

(*b*) No

(*c*) (i) No.

(ii) There should be special facilities and concession rates for the transport of raw produce and fodder.

(iii) Good roads are an old and pressing want of the agriculturists. My views on this point are summarised in my speech on the subject in the Central Provinces Legislative Council, printed on pages 54 to 56, Vol. I, of Council Proceedings of 1924.

4. No research by the Meteorological Department on the reduction in rainfall and its uncertainty is yet known. It should be made a prime necessity and widely and regularly published.

5. A systematic postal service in rural areas is still wanting. The difficulties have been put forth in my speech in the Central Provinces Legislative Council as printed on pages 35 to 40, Volume III, dated 20th November 1922, of the Council Proceedings. Those difficulties have not been materially remedied though my resolution was carried by an overwhelming majority.

6. In these days of rapid mechanical advancement, development of post and telegraph services in the rural area would be decidedly beneficial to the agriculturists who would thereby remain in closer touch with the world.

QUESTION 5.—FINANCE.—Government alone would be in the best position to finance the agriculturists by alloting sufficient sums for *taccavi* with, however, shorter process than the present one and for terms according to needs. The present allotments are far too low and the procedure cumbrous.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) A complete dependence upon rains which are becoming more and more uncertain, the usurious moneylender and the trickeries of the speculator in cotton (which is the main crop of Berar and which is controlled by the world market).

(ii) The main source is the valuable land. *Taccavi* is a small factor and co-operative credit societies being still in their infancy are a very small factor.

(iii) The uncertainty of timely rains, the land-grabbing tendency and trickery of the moneylender, and the rising cost of living and labour.

(*b*) I refer to my speech in the Central Provinces Legislative Council printed in Volume III, No. 6, of the Proceedings of 1923, from pages 368 to 391. There is no restriction upon moneylending in Berar. The rate of interest, for a very sound agriculturist is Rs. 18 per cent per annum and in the case of the small holders the moneylender manages by his various tricks to double his loan in one season only, *viz.*, by charging 25 per cent for the season only, by selling fodder and seed, in lieu of a part, at a much higher rate than he paid, and eventually contracting to take the produce, in satisfaction of his debt, at a rate much lower than the market rate. Usurious Loans Act is therefore an absolute necessity and the rate of interest must not be more than 6 per cent per annum, which is the maximum that an agriculturist can afford to pay, in case he gets a good crop. The moneylender may invent tricks to baffle the object of that legislation and therefore to bring him round, Government Central Banks on the lines of the small co-operative banks should be started all over. They should ascertain the value of the applicant's land, should advance him a sum to pay off all his liabilities and an additional enough sum, to enable him to stand on his own legs, taking the crop from an average of about ten years. His land should be worth a little more than the sum to be so given to him and it will remain as a mortgage till the debt is paid off. This alone will give life to him and the Government will not lose by charging 6 per cent. This will take some time. To start with, a definite and decent sum of say 50 lakhs of rupees should be earmarked annually, under a special head in the Provincial Budget, for relieving the indebtedness and checking its further progress.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) Compact property is decidedly better managed and at a lower cost and trouble, than scattered holdings, and it would be well to make them compact by exchange. Agriculturists, at times, do adopt the principle, but various considerations crop up and they cannot be entirely ignored. Usually land is hereditary and carries a sentiment with it; or a piece may have been

acquired after great exertions and fighting, and may have, as such, a special value for the holder. Government, however, do well in offering fair help in such affairs, to persons looking to them. If the system becomes popular and the agriculturists begin to reap the advantages of it, it is bound to progress without any legislation.

QUESTION 8.—IRRIGATION.—(*a*) (i) The whole of Berar, with its rich black soil, is badly wanting in perennial canals A survey by technical men may be made of the Satpura to North, which has seven rows of mountains with valleys between, and Ajanta to South to find out suitable places for tanks, and canals should be spread throughout Berar, which is a broad valley, opening on the Bombay Presidency. Several deep valleys, with a narrow outlet can be found in the mountains throughout the length of Berar. The soil of Satpura is suspected to be porous, and some chemical method will have to be adopted to make it hard.

(ii) Berar being mainly a plain, tanks and ponds, at a higher level than the land, cannot be put up, except in scattered places and may be constructed to help the main irrigation scheme, but care should be taken to see that they do not get silted up

(iii) Water level is going down and as was found in some recent trials at Akola and Murtizapur, in boring, there is a hard layer of rock below. It may not however be contiguous and boring was not done sufficiently deep, as is done in America and elsewhere. If such under-currents are traced and caught, the agriculturists will not hesitate to rush to them. A geological survey would be able to do valuable help in this direction.

QUESTION 14.—IMPLEMENTS.—(*b*) Before cultivator can risk his capital, he ought to be convinced of the utility of the machine and in order to so convince him, implements such as iron ploughs, winnowers, fodder-cutters, etc., should be kept at various centres. Demonstrations should also be given at fairs and all other occasions where cultivators come together in large numbers. Costly machines, which are beyond the means of the cultivator to purchase, should be kept at convenient centres, either for free trial or on moderate hire, and with that end in view, agricultural and industrial concerns should be started and encouraged. Persons capable of handling the machines are still few and Government should secure and provide them till local men get sufficient training and experience, otherwise full advantage cannot be taken of such machines.

QUESTION 15.—VETERINARY—(*a*) Civil Veterinary Department should be under the control of Director of Agriculture and should not be independent.

(*b*) (i) Yes; in some places the system works well.

(ii) No.

(iii) No.

(*c*) (i) Agriculturists do not make full use of the dispensaries mainly because they get their animals treated in their villages by old methods and also because it is too inconvenient to get the sick animal to the dispensary regularly for days. The masses do not, moreover have confidence in the perfection of the treatment, in preference to their old methods, which they mostly find effective and prompt, though to a modern man apparently crude. The improvement in the working is suggested in the answer to Question 1 above.

QUESTION 16.—ANIMAL HUSBANDARY.—(*a*) (ii) Pure milk is a great factor of livelihood and is becoming rare in Berar. Systematic dairies should therefore be started at various centres, at least in all important towns. A private enterprise in this direction should be encouraged by giving all sorts of facilities, *e. g.*, grazing, etc.

(*b*) (iii) Owing to shortage of rain the total quantity of fodder is going down and is becoming insufficient. On the other hand, there are several tracts in the Central Provinces where grass is in abundance and remains uncut. If railway facilities are kept ever open and not confined to famines only, that supply can be made use of to the advantage of both the tracts.

(*c*) April, May, June and July.

(*d*) As per (*b*) (iii) above.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) All the year round the cultivator is busy. In what may be called the slack season, *i e*, summer, he is engaged in ploughing, digging out grass, filling holes, putting up embankments, *i.e.*, preparing the ground for sowing. They are called summer operations.

(*d*) Yes.

(*f*) Yes.

R. S. T. S. KORDE.

QUESTION 20.—MARKETING.—No. I refer to cotton and grain markets in Berar. They are governed by a law, which is still ancient and deserves drastic changes which have already been proposed to the Central Provinces Cotton Committee. At present the producer, who has to cart his materials to the market, suffers by the tricks of the more educated and combined class of buyers, brokers, *adtyas* and weighmen, whose violation of the rules ought to be carefully watched and severely dealt with. The process should be so arranged, as to leave no secrecy about rates, which ought to be openly published by the body daily and to see that payments are properly and promptly made. In this connection it may be noted that bad roads seriously deter the sellers from going long distances, where they could get better prices, and have to be content with lower ones, at short distances. Construction and improvement of roads will bring the situation to the proper level. In this connection, I refer to my speech in the Central Provinces Legislative Council published in Volume I, pages 51 to 58 of 1924 Council Proceedings, as also to Volume II, No. 10, pages 681 to 683 of 1922. They will give the difficulties in more details. A reference is also solicited to my speech printed in Berar Legislative Council Proceedings of 17th July 1925, pages 78 to 83

QUESTION 22.—CO-OPERATION.—In addition to the present co-operative movement, I would recommend Co-operative Agricultural Associations to be brought into existence as they are in other advanced countries like America, Japan, etc. My views on the subject are set forth in my speech in the Central Provinces Legislative Council published in Volume III, No. 4, pages 237 to 239 of Council Proceedings of 1921 and further speeches thereon, published thereafter.

QUESTION 23.— GENERAL EDUCATION.—(*b*) (ii) As a President of District Council, Akola, I have a recent experience of compulsory education in which my Board has taken the lead in Berar. The boys have to attend the school from the age of 6 to 11. They leave school and take to their business as agriculturists or labourers. Gradually they forget entirely what they were taught and the efforts go in vain. The reason is that the curriculum is only theoretical and has no bearing upon their future life, that they might have any practical use of what they learnt. The better course would be to raise the age limit to about fifteen years, when in a couple of years, they would learn the three R's. useful to them. In the present system the District Council is a great loser. The education is free, though a majority of the boys can very well afford to pay normal fees, which, if collected can be used elsewhere.

(iii) Class IV in Primary schools is a stiff door to get through, as this test qualifies a man to be a *patel* and consequently a larger number drops down.

QUESTION 24.—ATTRACTING CAPITAL.—Men of enterprise and capital will be attracted to agriculture only if the indebtedness is removed, the status of agriculturists is further raised, if the rate of interest is brought on a par with normal agricultural income and if the Agricultural Department proceeds on systematic lines as already discussed above.

(*b*) Shortage of funds.

QUESTION 25.—WELFARE OF RURAL POPULATION.—No proper attention is paid to the sanitary condition of rural areas. The inhabitants have to suffer considerably in the rainy season owing to various epidemics. I have set forth the case in my resolution in the Central Provinces Council printed in Volume I pages 54 to 56 and 58 of Council Proceedings of 1924.

(*b*) Yes. I would earnestly urge to refer to my speech and also other speeches on my resolution in the Central Provinces Legislative Council Proceedings of 11th August 1923, printed in Volume III, No. 6, pages 368 and onwards.

Oral Evidence.

30679. *The Chairman*: Rao Sahib Korde, you are landlord at Murtizapur in the Akola district?— Yes.

30680. You have given the Commission a note of the evidence which you wish to put before us. Would you like at this stage to make a statement or shall I proceed to ask you one or two questions?—I would prefer to answer questions.

30681. Would you tell us the size of your estates?—I own nearly 600 acres of land.

30682. Of that is any part a home farm?—Yes.

30683. How much?—Nearly 400 acres of which 20 acres is a special farm.

R. S. T. S. KORDE.

30684. And the rest is leased out to tenants ?—Yes.

30685. What is the purpose of your special farm ?—Conducting experiments.

30686. Do you carry out experiments independently or you are working in consultation with the Agricultural Department?—Yes, I am in consultation with the Agricultural Department, but I am working independently.

30687. What is your main object in carrying out these experiments?—They are experiments in intensive cultivation, to see whether intensive cultivation would be beneficial to the cultivator and to what extent.

30688. Do you find that your tenants are taking any interest in these experiments?—Yes, when they see good results, I am sure they will take an interest in them.

30689. For how long have these experiments been carried out ?—For the last five years

30690. Turning to the note you have provided, you say that India must be split into areas according to soil and climate ?—Yes.

30691. Would that be independent of provincial boundaries?—Not independent of but within the provincial boundaries

30692. Then you would have in each Province, according to your scheme, different branches for different groups ?—Yes.

30693. That is, different branches for the purpose of research and investigation ?—Yes, according to the different crops

30694. Are you familiar with the working of the Indian Central Cotton Committee ?—I am on the Provincial Cotton Committee.

30695. That is part of the Indian Central Cotton Committee, is it not ?—Yes.

30696. What do you think of the scheme of organising research and propaganda according to crops ?—I do not attach great importance to it in the beginning. At this stage I do not attach much importance to this research.

30697. What do you think of the work of the Indian Central Cotton Committee ?—I do not think it is of substantial advantage to the cultivators.

30698. Have you followed its working closely ?—Yes. I am following closely the working of the Provincial Cotton Committee

30699. On the question of agricultural education, many witnesses have told the Commission that one of the principal difficulties in imparting education of an agricultural nature to the general public in the rural areas centres upon the difficulty of discovering and training the right type of the teacher, would you agree with that ?—Yes.

30700. Do you think that the present scales of pay are such as to attract the right class of man to the teaching profession ?—I do not think the teaching of agriculture is such a difficult task that in order to obtain the people we want we shall have to raise the salaries.

30701. It is merely a question of training the teacher ?—Yes. In fact, our country being an agricultural country, each and every teacher ought to be an agriculturist to a certain extent. There ought, however, to be a change in the curriculum.

30702. Have you taken a personal interest in the co-operative movement ?—Yes, to a certain extent.

30703. Have you taken active part in that movement ?—Yes, to a certain extent.

30704. In what capacity ?—I am one of the Directors of the Akola Central Bank and I have organised village societies.

30705. Did that Central Bank pass through something like a crisis recently ?—Yes, three or four years ago.

30706. Will you tell the Commission the nature of the crisis?—Want of funds.

30707. What exactly occurred as the result of lack of funds ?—Money which was advanced could not be recovered owing to the bad years. Cultivators could not return he money owing to the failure of crops.

30708. How many bad years had you ?—A great many. Very rarely do we have a good year. This is the third bad year we have had in succession. In fact, this year is so bad that it should be called a famine year.

30709 How does it compare with the average of the last twenty years ?—During the last twenty years with the exception of four or five years we have had no good years.

30710. Does that suggest that your standard of excellence is rather high ?—No, I do not think so.

30711. Do you think the bank was well advised in financing its operations on the assumption that any group of years (say the following three) was likely to be better than the average of the past twenty ?—They ought to take into consideration chiefly the difficulties of the cultivators.

30712. Have you any credit societies in your own villages ?—No, not up to now.

30713 How many villages have you ?—In Berar there is no malguzari system. We have got the ryotwari system. I own lands in two or three scattered villages.

30714. Under what system do you own your 600 acres ? Under the ryotwari system ?—Yes.

30715. Do you regard the extension of the co-operative credit movement as the most likely to afford relief to cultivators in the matter of their indebtedness ?—Yes, but it will be a very long time It will take, probably 40, 50 or even 100 years.

30716. Do you associate cheap credit with the danger of over-borrowing ?—I do not.

30717. Have you any experience of well irrigation ?—Yes, a good deal.

30718. In your own area ?—Yes.

30719. What has been your experience ?—Owing to the shortage of rainfall and scarcity of water, I have had to spend nearly 21,000 rupees for digging wells over an area of 20 acres.

30720 What has been the result ?—I have not got sufficient water.

30721. Were accurate surveys available to you before you dug these wells ?—Yes, I took every precaution before the wells were dug.

30722. At what depth did you find water ?—35 to 40 feet. We got water, but we did not get sufficient water. I wanted to irrigate the whole plot of 20 acres.

30723. What system of lift did you employ ?—I tried every system, the centrifugal pump, the wheel system and also *mote* and so on.

30724. Are you the President of the District Council at Akola now ?—Yes

30725. Do you think that body has got sufficient funds to discharge its duties ? Has it sufficient money to carry out necessary work ?—No.

30726. Is there a public demand for increased educational facilities ?—Yes, it is tremendous.

30727. And also for better roads ?—Yes, there is a growing demand.

30728. Which comes first in the public estimation ?—I should say both.

30729. You think it is a dead heat ?—Yes.

30730. What do you think about the system of handing over the administration of the Veterinary Service to the local bodies; do you approve of it ?—Yes.

30731. You think that has been a success ?—Yes.

30732. In this matter of attracting men of enterprise and capital to agriculture, do you think that the small size of the holdings is a serious bar to such men taking up agriculture ?—That is not applicable to the case of Berar; in certain parts of the Central Provinces that is the case; it is applicable to Chhattisgarh.

30733. Otherwise, there is ample land ?—Yes.

30734. Still under forest; is that the point ?—We have got enough big plots.

30735. There is enough cultivated land ?—Yes.

30736. *Sir Henry Lawrence*: Your Local Board has not got enough revenue?—There are outstanding demands; if we had more funds, they could be utilised. We have now to restrict our expenditure.

30737. What cess is levied for the purpose of the Local Boards?—We charge 18 pies per rupee of the land revenue, chiefly for educational purposes.

30738. Have you increased that cess in recent years?—Yes, from 12 pies to 18 pies.

30739. In what year?—Three or four years ago.

30740. Under your new Local Self-Government Act?—Yes, after that.

30741. Can you raise it any more?—No.

30742. The law does not allow you to raise it?—We cannot raise it, looking to the circumstances of the public, they cannot bear any further taxation.

30743. The people are not prepared to pay any more?—No; not only that but they are unwilling to pay even 18 pies, which is considered very heavy.

30744. They consider that too heavy?—Yes.

30745 How much extra revenue did this additional 6 pies bring you?—In all we got about Rs. 3 lakhs, the additional revenue must be about Rs. 1 lakh.

30746. To what have you applied this extra lakh of rupees which you have recently obtained?—Almost all to education.

30747. Not on roads?—The district funds do not permit of any substantial sums being spent on the improvement of the roads. However, my District Council is trying its best, but others are not doing so. For the last three years we are spending Rs. 30,000 for the improvement of the fair weather roads, but that is practically nothing. Government must take up the improvement of the fair weather roads.

30748 How much, do you estimate, is necessary for expenditure on these fair weather roads?—Unless a regular survey is taken it cannot be said what the expenditure will be, because at some places they will require a good deal of expenditure, and at other places they may cost less. In places where there are *nullahs* and inconvenient places, the expenditure will be more, but where it is flat land it will be less.

30749. Is any money from provincial revenue spent on the Local Board roads? Do you get any subventions?—For Local Board roads we do not get anything.

30750. You get no subventions?—Some roads have been transferred to the District Council for maintenance, and we incur some charges for that. We do not get any subventions for the improvement of the Local Board roads, we have been crying for the last so many years for the improvement of these fair weather roads, but Government has not paid any attention to it till now.

30751. You say that you spent Rs 22,000 on trying to get water for 20 acres?—Yes, sufficient water.

30752. How many wells did you sink?—Four.

30753. Each cost you Rs. 5,000?—One well cost me nearly Rs. 11,000 and and remaining 3 Rs. 11,000.

30754. How did you ascertain the site on which to dig?—Did you call in a water finder?—There are some of these village water finders; they can point out the site.

30755. Are they reliable in their advice?—So the people say, but I preferred my own sites. I looked to the low level of the ground and other favourable signs and selected the sites.

30756. You selected the sites yourself, on your own judgment?—Yes.

30757. On your 600 acres, do you levy cash rents from your tenants or do you share the produce?—For the last ten years I have been levying cash rents on some fields and on others I share the produce; it is called *batai*.

30758. What is your principal crop? Is it cotton?—Cotton, wheat, *juar* and so many other crops; but for the last twenty years there being scarcity and uncertainty of rainfall, we cannot take the risk of reserving our land for *rabi* crops which require a greater amount of rainfall.

R. S. T. S. KORDE.

30759. You chiefly grow cotton?—Yes, cotton and *juar*.

30760. How much per acre do your cash rents amount to as a rule?—I cannot give any round figure. This year the rent value has gone very high, it all depends on the rates prevalent in the market.

30761. Can you give me the figure?—It varies from Rs. 5 to Rs. 15 or, at the most, Rs. 20 per acre.

30762 What is the land revenue which you pay on an acre of such land?—Rs. 2 to Rs. 3.

30763. *Sir Ganga Ram*: Do you always take from your tenants cash rent, or do you also participate in share of the produce?—Not always; sometimes we get cash rents and sometimes we do not.

30764. When you participate in kind, what share do you get?—It depends on the quality of the soil; you may get one-third or even less.

30765. Were the wells that you sunk *pucca* masonry wells or were they *kutcha* wells?—They were *pucca* wells.

30766. Made of brick?—Yes, brick and lime.

30767 Were they circular or rectangular?—One big well that I have built is square.

30768. Why did you make it square?—Because I wanted to have a way to go in for which a staircase was necessary, I thought it was preferable to a round well.

30769. Were you asked by any engineer to do that?—No.

30770. Besides your income from the land, do you do any moneylending?—No. The chief source of my income is land.

30771. Are you a member of the Legislative Council?—Yes.

30772. Which party do you belong to? I belong to the Nationalist party.

30773 What kind of soil have you got?—We have got different kinds of land in Berar.

30774 What crops do you grow?—I grow all sorts of crops, cotton, *juar*, pulses, etc.

30775 Do you grow any garden crops?—Yes

30776. May I ask you what your income from 600 acres is?—At times it is a *minus* figure, in bad years, especially during the last two years, we could not realise even what we had spent on agriculture

30777. You said there was difficulty in the Central Bank for want of funds, did you mean want of deposits?—Yes

30778. Their chief source of income is deposits?—They borrow from the Provincial Bank.

30779. They do not get any deposits?—There are some deposits, but deposits are not the chief source.

30780. What do you mean by fair weather roads?—They are village roads.

30781. Are they on the same level as the ground?—Not on the ground level, almost all these roads have been sunk.

30782. Do you want to bring them to the ground level?—Yes, we want money for that; we are not ambitious to make all these roads *pucca* roads.

30783. Can you say how much it would cost per mile?—It would require from Rs. 500 to Rs. 1,000 per mile; that would not be the cost for the whole length of the road, but only at some places.

30784. You have no land irrigated from tanks?—No.

30785. And this tax of 18 pies per rupee of land revenue was intended for irrigation?—No, for education.

30786. They do not spend it on education?—They do, they spend even more than that; nearly half the income is spent on education.

R. S. T. S. KORDE.

30787. What education do you mean? Is it rural education?—Rural and urban education is the same thing; there is no difference. We are concerned with primary education.

30788. Primary education for the agriculturists?—All boys receive it.

30789. It is not intended for the boys of agriculturists alone?—There is no distinction made between agriculturist boys and other boys. More than 80 per cent of the population is agricultural; it is not barred for boys of other classes.

30790. *Sir Thomas Middleton*: You are chiefly interested in the cotton crop in your district?—We are interested in all the crops.

30791. Is not the cotton crop the most important?—This crop was popular for some years because it was fetching a better price, but now we have learnt a good lesson and we go in for other crops. This year, the area under cotton has gone down, and next year it will go down still further.

30792. The last witness told us that the cotton that you had in the district was becoming less popular, because it was suffering from disease?—It is not chiefly because of disease; of course, it does suffer from disease.

30793. What kind of cotton do you grow in your district?—Generally, till now, *roseum* cotton was popular.

30794. Do you think that *roseum* is as healthy as it used to be?—They say so. Though every year I am sowing that cotton, I have not kept separate accounts to compare the yield of *roseum* cotton with that of other varieties, but I have heard people say that *roseum* cotton yields more.

30795. You have had no complaints about it in your district?—The complaint is that it does not fetch good prices; there is no demand.

30796. That is because of the quality?—It is short staple cotton; we want a long staple variety which will suit the climatic and soil conditions of your Province.

30797. Can you grow long staple cotton in your district?—I made trials with it for a couple of years, but I had to give it up.

30798. Have not your neighbours always cultivated short staple cotton?—Formerly, they were growing long staple cotton, but it requires more rainfall.

30799. When you say formerly, how long ago?—About 30 years ago.

30800. I think you said you would like every teacher in the primary schools to be something of an agriculturist?—90 per cent of them are agriculturist teachers coming from the agricultural class; they need not be taught any scientific knowledge of agriculture.

30801. What are they paid in your district?—From Rs. 22 to Rs. 60 or Rs. 75.

30802. You are a Director of the Akola Bank. The fact that the Bank got into some difficulty two or three years ago has been mentioned; you pointed out that that was due to bad seasons?—Yes, bad seasons and the difficulties of the agriculturists.

30803. Any bank that lends money mainly to agriculturists must expect such bad seasons; what steps did you take to accumulate a reserve fund?—I was not on the managing board.

30804. Not at that time?—Nor am I now on the managing board.

30805. You spoke of irrigating 20 acres from four wells?—Yes.

30806. Were those 20 acres all in one block?—Yes.

30807. Do you not think that 5 acres irrigation from one well is a very large amount to expect in Berar?—We can irrigate up to 4 acres with one well provided it had a good supply of water, but with these 4 wells at the present time I cannot irrigate more than 7 or 8 acres.

30808. About 2 acres a well?—Yes, and during the hot season I cannot produce any crops.

30809. *Dr. Hyder*: You recommend this indigenous system of treating animals; have you much faith in the Indian veterinary people who practice Indian methods, the old system?—Yes, I have.

30810. Do you not think there is a danger of quackery?—I have known many cases and find the percentage of quackery is so small as not to be dangerous; it is worth trying.

30811. You have said that the village roads are not in good condition; what is the width of a village road?—1 chain, that is, 33 ft.

30812. Is that the standard width?—Yes.

30813. So that carts laden with cotton can pass easily?—No, they cannot; that is not owing to the width but because the roads are sunk so that carts cannot pass each other.

30814. You mean that these roads have sunk below the surrounding level?—Yes.

30815 There are ruts?—Yes.

30816. So that there is difficulty in the transportation of cotton by carts to the markets, is that your view?—Yes, they cannot get along easily; it takes them 24 hours to cover a distance of 20 miles sometimes.

30817 These village roads are maintained by your *Mahars*, are they not?—No. It was formerly one of the duties of the *Mahars* to do the necessary small repairs after the rainy season when the roads were impassable

30818. Why did you abolish the *baluta* system?—I am not responsible for that; on the contrary, I was in favour of the *baluta* system, we shall have to return to that system.

30819. *Sir Henry Lawrence*: When was it abolished?—Three or four years ago.

30820. *Dr. Hyder*: How does the cotton grower fare when he gets to the cotton market?—He certainly does not receive fair treatment

30821. Of what do you complain?—Of everything.

30822. Well, mention some things of which you complain?—I should have to draw a picture of it, one cannot imagine it unless one is cognisant of it and actually sees what happens. This is the actual state of affairs the villagers take their carts to the cotton markets I am talking with regard to Berar only. There are very few cotton markets in Berar. Some villagers have to take their carts to a cotton market as far distant as 40, 50 or even 60 miles The system in the cotton markets is that there are these licensed brokers, *adtyas*, weighmen, and some purchasers. The carts are sold through these brokers In 70 or 80 per cent of the cases the brokers and *adtyas* are the same persons. They take charges for brokerage and also as *adtyas*, it is a very heavy burden on the sellers. It is not compulsory on the seller to sell his cotton through these brokers and *adtyas*, but being quite ignorant and illiterate and not knowing the prevailing rates, or being acquainted with the purchasers, he has to employ their agency. Generally there are 100, 150 or 200 of these brokers attached to big cotton markets such as Amraoti and Akola No sooner does his cart get to the gates of the cotton market than 50, 60 or 100 of these brokers surround him; some catchhold of the nose-string of his bullock, some his turban and some his coat, and they pester him in order to get his agency.

30823. He is apparently a much sought-after man, and therefore he should be in a much stronger position?—The poor fellow being alone on the cart, what can he do? If he decides to employ a particular broker, then his cart is taken into the cotton market. I may point out to you that the law as to these cotton and grain markets is most defective, and there are all sorts of malpractices in the market. His cart is taken into the cotton market. The broker, who is generally mixed up with these sellers, goes and settles the rate secretly, he does it by some signs under a cloth taking up a handkerchief and moving his fingers. In that way they settle the rate at so many rupees a *khandi*. The grower is then told that the rate is Rs. 80 or Rs. 90 per *khandi*, or whatever it is. If a particular broker has had 100 carts come to him that day, he tells the clerk of the cotton market that he has 100 carts and those carts are entered in that broker's name though he is not the actual grower. It is entered as being 100 carts sold by "A" to "B", and the receipts are handed over to the broker who then goes to a ginning factory. The price is then settled at some flat rate, and the cart is taken to the ginning factory. I may point out that all these cotton markets in Berar depend on the Bombay market which depends on the markets of America and England, so that 10 times a day telegrams are received giving the Bomaby rate. Though the cotton crop only comes once a year, the rates change as much as 100 times in a day. If the rate is fixed for a particular cart at Rs. 100, and the purchaser

then receives a telegram from Bombay telling him that the Bombay rate has gone down, he will find out ways of slipping out of his bargain: one or two weighments of the cotton are taken and then the purchaser will point out that the cotton is damp or has some other fault. Then the grower has to reduce his price though the rate may have been already practically settled.

30824. Do you mean to say that contracts once entered into are broken?—Yes, that is the case everywhere. There are also the trickeries of the weighmen, they take more cotton than they are weighing on the hand scale. The grower is an illiterate person and while he is busy watching that others do not steal his cotton, the weighman counts falsely. If the grower goes to some market authority and complains that his cart has already been sold at a higher price than he is now offered, it is found that he has no evidence, he has no record of the transaction entered in the registar of the cotton market, though he has to pay the market fee. The broker has become the owner of the cotton, because a certain number of carts is entered in his name, and therefore the grower cannot make any complaint. The law ought to be drastically amended as soon as possible.

30825 Can you suggest any drastic changes?—Yes, I have suggested the changes in detail to the Central Provinces Cotton Committee; a draft Bill is ready and I think it will be passed by the Board soon.

30826 Do you think that draft Bill will amend these defects?—Yes, all these evils of weighmen, brokers and middlemen. If I go to market and sell a cart of cotton, the buyer should pay me the full amount; why should I pay these charges?

30827. There is a disparity as regards intelligence and education between these two people; the cultivator knows nothing while these other gentlemen know all the tricks of the trade?—Yes There should be a majority of sellers on the Market Committee.

30828. With regard to postal facilities, if I were to post in Akola a letter to a village how many days would it take for that letter to be delivered at its destination?—From 8 to 15 days, that is actully the state of things; I have moved a resolution in the Council asking that the Local Government should recommend to the Central Government that this should be remedied. The system is generally this: The Post Office has a village peon who comes to the Post Office and takes the letters once a week. He takes a round in those villages and then returns on the next bazaar day. Then suppose, after he goes to the Post Office on the next day, a letter comes addressed to somebody else in the village, he goes to the village next week taking that letter with him.

30829. *Dr Hyder*: But what was the good of moving a resolution in this Council? You know the Post Office is not a provincial subject?—I know it and that is why I asked the Local Government to move the Imperial Government in the matter.

30830. *The Raja of Parlakimedi*: You say that it will be better if the Veterinary Department also takes up the study and teaching of indigenous methods. But is it not a fact that many people with a so-called knowledge of indigenous treatment will not come forward to reveal their respective remedies?—We have to so arrange that thay will come and supply us that information.

30831. Who is to undertake that business?—The State, the Government.

30832. Do you not think that it is a work to be done by the public? It is beyond the scope of the public or of private individuals.

30833. Even to collect information?—Government may take the help of the public if necessary; that is a different question altogether. It is not a question of a few months or a year or two; it would take many years

30834. Do you not think that before approaching the Government it would be better that some public spirited gentlemen should go about and gather information and place it in the hands of the Government?—That is not feasible.

30835. You say that Government should take it up?—Yes.

30836. From your personal knowledge could you say whether the indigenous method of treatment is better than the method adopted by the Veterinary Department?—Yes; I will give one instance which occurred last month. The leg of an ox was dislocated and it was taken to the veterinary dispensary. The

veterinary doctor attended to it for 10 days but could not cure it and he asked the owner to leave it with him for another fortnight. Meanwhile one of the relatives of the owner came to know of this and he said he would take it to a man near by who would cure it in no time. Accordingly the ox was taken there and the man gave it some strokes with a big rod at some particular point and the ox was all right in a few hours.

30837. Did it not make matters worse?—No.

30838. Did you verify that personally or is it mere hearsay?—I saw it with my own eyes.

39839. Personally I would not like to entrust my bulls to such treatment?—May be.

30840. You suggest that in Berar there is dearth of irrigation and irrigation works should be undertaken?—Yes.

30841. Is it popular?—Yes.

30842. Has it been taken up in a manner that the Government feels that the people really want such a thing?—Yes; it has been represented and brought to the notice of the Government in this very hall in the Central Provinces Council more than once.

30843. By a few representatives?—But they represent the whole public.

30844. Did they represent what the people wanted actually?—Yes, they did not move the resolution of their own accord, there was a demand for such a thing.

30845. Can the Commission understand that the people of that area are willing to enter into an agreement with Government and take advantage of such irrigation works?—They know the terms of the agreement; we have discussed that question in the Provincial Board of Agriculture too.

30846. I suppose you might have heard that in other parts of this Province there are potential irrigation facilities and it is the people that are not willing to take advantage of such things?—Such circumstances do not exist in our part of the Province. But the trouble is that a few of them require water and the others do not; not only that, there is a dearth of drinking water; that is the main difficulty.

30847. Does not that area have any District or Local Board?—But what can they do? They cannot take up such costly schemes.

30848. Can they not create facilities for drinking water, by digging wells and the like?—No; they cannot incur such large expenditure all over the Province, but they try their level best.

30849. Are they trying?—Yes.

30850. How many wells do these local bodies and District Boards possess now?—I cannot give the exact number; but they may have about 75.

30851. Do you know the amount that the Local Board lays aside for such works?—My Board gives Rs. 5,000 to Rs. 7,000.

30852. For the whole of Berar?—Yes; for the four districts of Berar.

30853. Is it an accurate figure?—How can I give accurate figures for all the Local Boards?

30854. As regards agricultural indebtedness, does the practice of lending grain in kind exist in this Province?—Yes, in some parts.

30855. In such cases what is the rate of interest charged?—It is terrible; they take *sawai* for three months, that is 1¼ times. As the previous witness has said they give 4 *khandis* of cotton seed and take back 2 *khandis* of cotton; that is for a few months only.

30856. Is that a universal practice in this Province?—Not universal; it exists in some parts.

30857. Both the interest and the principal are calculated at the time of the harvest?—Yes.

30858. Then as regards fragmentation of holdings you suggest: "Government, however, do well in offering fair help in such affairs to persons looking to them". What do you mean by that?—Government has taken up this question of consolidation of holdings and they are trying their best wherever possible.

30859. Are Government acquiring land?—No; they are making both parties agree; efforts are being made in that direction in our Province.

30860. When a man has to part with land, what compensation does he get?—It depends on the nature of the soil.

30861. But what is the usual practice?—There is no usual practice; we have not come to that stage yet.

30862. *Sir S. M. Chitnavis*: No consolidation is going on in Berar?—No; I am referring to the Chhattisgarh district.

30863. *The Raja of Parlakimedi*: Whenever exchange of lands takes place, what is the practice adopted?—That practice is not prevalent in Berar; we have got bigger plots.

30864. *Mr. Kamat*: You make some suggestions with regard to agricultural indebtedness. You say in the first place that the moneylender manages by his various tricks to double his loan in one season only. Can you explain how that occurs?—The previous witness has cleared that point, I think.

30865. I want you to give us an instance of how it is possible?—For the season time only, that is for three months, the moneylender gives money on *sawai*.

30866. You are referring to loans in kind and not to cash loans?—Cash loans too.

30867. Please explain how a cash loan of Rs. 100 is doubled in one season?—In three months he can recover 25 per cent; so in one year it become double the amount at that proportion.

30868. In three months he gets Rs. 125 for Rs. 100?—Yes.

30869. In the remaining nine months what does he get?—If we are to apply that proportion in one year, it is double.

30870. Your remedy to cures this evil is the Usurious Loans Act, which you say is an absolute necessity?—My chief remedy would be that the State must come forward

30871. But you suggest that there should be restriction of interest and the rate to be fixed should be 6 per cent per annum?—Yes

30872. Your moneylenders would not come forward at that rate if that were to be fixed as the maximum rate?—They will, when the Government or the State take it into their hands and relieve the agriculturists of their indebtedness.

30873. They will offer to lend money at 6 per cent?—Even at less than that.

30874. Pending that period when the Government will take it over you suggest that the State should support the Central Banks?—My first remedy is that the State should come forward and earmark a big amount not less than Rs 50,00,000 every year in the provincial budget, which should be distributed to the agriculturists who are in indigent circumstances.

30875. Then again efforts should be made to expand the credit societies also?—No, the Government should advance the loans direct to the agriculturists just as they do in the case of *taccavi* loans. Before that my point is that a survey of the indebtedness of the agriculturists should be taken and the figure that would be required should be ascertained.

30876. After taking an economic survey of indebtedness, you want Government to earmark Rs. 50,00,000 per year to be given direct to the agriculturists at not more than 6 per cent interest?—Yes, because the agriculturist cannot realise more than 6 per cent interest from his cultivation.

30877. Where would the place of the co-operative movement be if Government were to give direct loans to the agriculturists according to your system?—Credit societies cannot cope with the demand at present. I have suggested that remedy and after that the co-operative credit societies should take it into their own hands.

30878. Do I understand you to mean that until Government carries on this system of yours of earmarking Rs. 50,00,000 and advancing it direct to the agriculturists you suggest there should be neither the moneylender nor the co-operative

societies in the rural economics of the country?—No, I do not say that. The Government could immediately come forward and help the agriculturists at this particular stage.

30879. Talking about irrigation, you say that the soil of Satpura is suspected to be porous and some chemical method will have to be adopted to make it hard. What is it that you have in mind? I have raised this question because I may get the reply that the soil of Satpura is porous. Anticipating that reply I have already suggested that even if it be porous, some chemical means should be found out and it should be made impermeable.

30880. Speaking about general education you suggest that education is free, though a majority of the boys can very well afford to pay normal fees, which, if collected, can be used elsewhere. Are you against free education?—Certainly not.

30881 Then what is the point of your suggestion? You say if fees were to be collected they could be used elsewhere?—Because the present practice is that wherever compulsory education is started, the District Councils do not get these fees. Some percentage should be realised Parents of some boys are in a position to pay the fees but they too are exempted. And besides, the school-going age is fixed at between 6 and 11.

30882. That is quite another point You are not wholly, I take it, in favour of free education?—I am in favour of free and compulsory education. But the age limit should be extended to 15.

30883. That I say is quite a different point. If you are, as you say, in favour of free education you cannot levy fees? Even if the father of the boy is well-to-do, you cannot levy a fee if you say you are in favour of free educatiou?—Yes, I see the point but even so I am in favour of free education.

30884. You say that there should be special facilities and concession rates for the transport of raw produce and fodder. Have you studied the present rates of the railways, whether they are earning or losing?—No.

30885. You want a general lowering for all agricultural produce?—Yes, they extended this concession in the days of scarcity.

30886 You said this was a famine year for the cotton growers; you are a cotton grower; are all cotton growers famine-stricken?—I cannot say from village to village but the majority of them are.

30887. Do you mean to say that cotton growing shows a deficit?—Certainly.

30888. Can you give me the figures of the cost of production per acre of cotton and what price you have realised this year? What is the present rate of cotton. Is it Rs. 100 a *khandi* or Rs. 85?—Taking the standard of Rs. 80 per *khandi* of 28 maunds this year some fields could not yield more than 2 maunds or 3 maunds per acre.

30889. The production was 3 maunds per acre? And how much was the cost including labour and everything else? You gave me the outturn and its cost?—No I did not give the cost. I am taking some particular cases, and not cases in general. I think the cost is Rs 15.

30890. You stated this was a year of famine for all cotton growers?—But I did not say cent per cent.

30891. Even taking the worst cases, supposing the average outturn was equivalent in rupees to say Rs 20?—No, taking the value of 3 maunds it comes not to Rs. 20 but to Rs. 9 or Rs. 10 *i. e*, 28 maunds per *khandi* fetch Rs. 85.

30892. *Sir Ganga Ram*: Rs. 3 per maund of cotton?—Yes.

30893. *Sir Henry Lawrence*: What is a maund?—It is 28 lbs.

30894. *Mr. Kamat*: You say that throughout the Berar, on an average, the cost of the cotton produced per acre would be about Rs. 20 or even less?—No, it would be Rs. 10 to Rs. 15

30895. What would be the cost of production, cost of ploughing, labour, etc.?—I said Rs. 10 to Rs. 15 would bo the cost of production; this includes labour, weeding expenses, etc.

30896. You realise Rs. 10 as the value of the outturn and you think the loss has been Rs. 5 per acre?—I am not giving the average figure. In some cases it varies according to the fields and according to the situation.

30897. If that is the case, in the majority of cases there is no famine?—Yes.

30898. Give me at least the worst case and the best case?—For a good crop this year, 4 acres will yield one *khandi* the value of which will be Rs 80 or Rs. 85.

30899. What about the cost of labour?—This year the labour charges are very high and he will have to spend about Rs. 100. He cannot recover even what he has spent.

30900. Then the man who realises Rs. 85 has to spend Rs. 100?—Yes.

30901. He is therefore losing to the extent of Rs. 15?—Yes.

30902. *Sir Ganga Ram*: How much yield did you get last year from *roseum* cotton?—For the last four or five years we have not had good crops.

30903. I want to know how many maunds you get per acre with *roseum* cotton?—A bumper crop in a good year would yield one *khandi* per acre, or 20 maunds per acre.

30904. This year it has not been anything like that?—No, it has been 2, 3 or 5.

30905. Can you give any reason for that?—Has the seed deteriorated?—No, it is due to the shortage of rainfall My request to the Commission is that efforts should be directed to the regulation of the rainfall which is most uncertain.

30906. God alone can do that?—If the rainfall could be regulated, very many difficulties would be removed yet

30907. Yet you are aspiring to grow long staple cotton, which can be sown only in April?—Our first need is to have a good crop with short cotton, after that we might aspire to the long cotton.

(The witness withdrew.)

Mr. C. W. WILSON., M.R.C.V.S., I.V.S., Veterinary Adviser to Government, Central Provinces.

Replies to the Questionnaire.

QUESTION I.—RESEARCH.—(*a*) (ii) The Imperial Laboratory at Muktesar and the branch at Bareilly are our Research Institutions and are under the control of the Central Government. The Muktesar Institute was started for the purpose of the manufacture of sera and vaccines, particularly for anti-rinderpest serum as the hill cattle in that locality were highly susceptible to that disease. During the last twenty years it has expanded enormously and, in addition to an increase in the amount of sera turned out yearly, research work has been conducted and investigation into the common diseases affecting equines and bovines in this country. Very valuable results of their researches have been afforded by the various workers there not only to the provincial departments in India but to the profession generally throughout the world. The laboratories were extensively used by the investigators into foot-and-mouth disease who were deputed by the Home Government when the seriousness of that disease was beginning to be realised by the British public. The most up-to-date equipment for serum manufacture and research work has been introduced and judging by results it appears that the organisation of veterinary research work in the Muktesar Institution compares favourably with similar institutions in other countries. The administration seems to have suffered by reason of the short tenure of office held by Directors and research workers. After a few years and even less they have usually obtained other appointments. The system of direct appointment has been unpopular, and it is generally conceded by officers of the department that the administrative control of the laboratory should be placed under a senior officer having experience of provincial work. If a Veterinary Adviser to the Government of India were appointed then he would be the most suitable man for the post Such an arrangement would leave research workers free from outside duties and would give them the advantages of direction in the investigation of disease of animals requiring immediate attention. The Institution makes a profit by sale of sera, vaccines, etc., and whatever surplus money stands to its credit should be spent on additional facilities for research work. The position of the place is suitable for the manufacture of sera and vaccines as the staff can work comfortably throughout the year but it is not equally suitable for research work owing to its elevation. It is thought that a research institution would be more advantageously placed where general conditions are the same as those affecting the animals under observation. We cannot expect Muktesar to conduct investigation into all the problems requiring solution, so it is expedient for provincial departments to have the means at their disposal for working out those problems affecting them particularly.

(*b*) As no research officers have been appointed in this Province, no particulars can be supplied.

QUESTION 15.—VETERINARY.—(*a*) The Veterinary Department was at one time controlled by the Director of Agriculture though it is now under separate expert management. It should remain independent.

(*b*) (i) Veterinary dispensaries in the Central Provinces and Berar are divided into three classes, *viz.*:—

(1) Provincial.
(2) Local Fund.
(3) Private.

Class (1) dispensaries are maintained by provincial funds and are entirely under Government management. Class (2) comprises dispensaries under Government supervision but maintained partly by local funds and partly by Government. Class (3) institutions are maintained entirely at the cost of Court of Wards, Indian States and certain local bodies under their own management. The system of class (2) dispensaries would work much better if more interest were taken in these institutions by Local Board members.

(ii) No.

(iii) Only partially. Local Board members would probably take no interest in these dispensaries if they ceased to have any hand in the management of them. They should be encouraged to take interest in them.

(*c*) (i) No

By stimulating propaganda and by giving demonstrations at cattle shows, fairs and markets. The propaganda must be in the hands of professional men as they would be required to give practical demonstrations of operations in addition to lectures. In rural tracts propaganda by means of cinema films and lantern would be advantageous.

(ii) Yes. The services of peripatetic Veterinary Assistant Surgeons are used largely by malguzars but not fully by the cultivator class in those tracts where cattle are of little value. It is the most important branch of the department's duties as the touring Assistant Surgeons are brought into close association with the ryots.

(*d*) The religious scruples of the Hindus in so far as they affect cattle are subtle and intimate and so closely interwoven with the home life of the people professing this religion that it would be well nigh impossible to introduce any form of legislation of the nature of a "Diseases of Animals Act" providing measures for the destruction of the sick cattle, segregation, and control over movements of cattle as obtain in other countries. Existing conditions can best be improved by education. Animal hygiene might be included amongst subjects taught in elementary schools.

(*e*) In bad years the demand for serum is very heavy and sometimes difficulty in securing sufficient quantity is felt. Considering the enormous demand for anti-rinderpest serum at times and the difficulties in transport, it is surprising how efficiently Provinces are served. The railways might grant special facilities for this commodity.

(*f*) Obstacles are mainly religious scruples. Suspicion as to the nature and process of manufacture of sera and vaccines remains. No fees are charged for any work done in connection with agricultural cattle.

(*g*) Yes.

(i) For many years in my Annual Reports to Government on the work of the department, the necessity for the setting up of a Provincial Veterinary Research Institution has been stressed. The scheme is at present under the consideration of Government.

(*h*) By research officers in the Province. Research scholarships could be awarded to young graduates by Government. These scholars when employed in provincial research institutions would be competent to train the graduates of Indian colleges.

(i) Yes.

(1) Co-ordination of veterinary matters in the Provinces and States.

(2) To deal with matters of a central nature.

(3) To advise Government of India on export and import of cattle.

(4) To scrutinise programmes of research work at Muktesar and provincial research institutions and thus prevent overlapping,

(5) To relieve scientific workers of administrative duties now interfering with their legitimate work.

Oral Evidence.

30908. *The Chairman*: Mr. Wilson, you are Veterinary Adviser to the Government of the Central Provinces?—Yes.

30909. You have provided the Commission with a note of the evidence which you wish to put before us. Do you wish to make, at this stage, any statement of a general nature?—Yes, I would like to say a few words. The veterinary officer in charge of a Province should have complete control of the veterinary staff dealing with control of contagious diseases of animals, so that he can give effect to his policy in regard to these after obtaining the sanction of Government. This means the abolition of dual control (District Board Control) in those Provinces where it now exists. Apart from the mutual reporting of contagious diseases scheduled under the Glanders and Farcy Act there is little co-ordination in veterinary work of Provinces and Indian States. It does not seem judicious for this department to be isolated because it happens to be a Transferred subject in a self-governing Province. The work of the Provincial Governments in the control of contagious diseases of animals should be co-ordinated by a central head with the Government of India. He would be the Veterinary Adviser to the Government of India. This officer would visit the Provinces and advise as to the improvement and co-ordination of work for the benefit of the Province and for the good of India as a whole. Without systematic and sustained effort, contagious diseases of animals in India can never be brought under control.

30910. Before you proceed further, I would like to clear up one or two points. You say that you should have complete control over the veterinary officers in the Province?—Yes.

30911. You suggest that the veterinary officers working under local authorities should cease to be under them. You refer to the Veterinary Assistants under the Local Boards?—They should be controlled by the provincial officers and the District Boards should have a part in the management of the dispensaries.

30912. Would that involve any change in the present system?—Not in this Province, but in some Provinces it might.

30913. Will you continue your remarks?—With regard to education, at a Conference of Veterinary Officers in 1919 it was resolved that a Board of Veterinary Studies should be constituted. This Board would be authorised to make modifications and additions to the course from time to time in consideration of the needs of the several Provinces. I consider the constitution of this Board of Veterinary Studies an urgent matter. In Chapter XV, paragraph 134, page 49 of the *Memorandum on Rural Conditions and Agricultural Development* the statement regarding a research institute being under the consideration of Government is somewhat misleading. Very limited accommodation only is provided for this department in the Agricultural Research Institute at Nagpur. A separate Veterinary Research Institute is required with wards for animals under observation. The close connection between the problems of public health and those of the Veterinary Department is inclined to be overlooked. In my opinion the public health and Veterinary research laboratories should be housed in the same building. I think the problems connected with human tuberculosis, for example, would stand a better chance of solution were the medical and veterinary research officers working hand in hand. Although the Agriculture and Veterinary Departments are under separate direction they have always worked together amicably. A Veterinary Inspector's services are lent for the better control of cattle diseases occurring in the Nagpur College and Telinkheri farms and this man also lectures to the Agricultural College students on Veterinary subjects and gives practical demonstrations in Veterinary first aid. The Veterinary Assistant Surgeon in charge of the Nagpur Veterinary Hospital also delivers lectures to the students. The Government agricultural farms where cattle-breeding is conducted are regularly inspected by gazetted and subordinate officers of the department and timely assistance is given by them whenever their services are required. The sterilisation of scrub bulls must have a beneficent effect and considerably facilitate the success of cattle-breeding operations.

30914. Would you give us an account of your own training and past posts in India?—Originally I was posted to Hissar farm in the Punjab and after being there a few weeks I was put in control of the Hissar farm and in the second year of my service I officiated for one year as Superintendent of that farm. After that, I was transferred to the United Provinces where cattle breeding was under the control of the Civil Veterinary Department in addition to horse-breeding operations. After eight years' service in the United Provinces, I was transferred to the Central Provinces where cattle-breeding is carried out by a special branch of the Agricultural Department.

30915. Where were you trained?—In England, at the Veterinary College, London.

30916. Would you also give us, quite shortly, an account of your staff here? You are Veterinary Adviser to Government and head of the Service in this Province. Have you any deputies?—I am the Veterinary Adviser and also Superintendent of the Department. I have a second Superintendent who is an Imperial Service Officer and has six years' service in India and former war service and service in various colonies. In addition to that I have six Deputy Superintendents. I am allowed 22 Inspectors, but I have only 16 now. My cadre of Veterinary Assistant Surgeons is 145; at the present time only 129 are actually working.

30917. These are the officers who work in the dispensaries under the District Boards, are they?—Yes, in the dispensaries and also on peripatetic duties.

30918. What do you think about the calibre of these men?—We are in a way unfortunately situated in this Province, because we are dependent entirely upon recruits from outside the Province itself. We have no Veterinary College for training these men, and the result is we have not got the best type of men in the Province.

30919. Could you carry a Veterinary College in this Province at this stage of development?—Yes.

30920. So that the teaching you are giving in connection with the Agricultural College is the veterinary teaching which students require for their agricultural degree?—Exactly.

30921. Have you premises or laboratories at your disposal?—Only a few rooms in the Agricultural Research Institute.

30922. Do they meet your requirements?—No.

30923. Are they too small?—Yes. There is no accommodation for experimental work. It is impossible to have any wards for animals inside the Research Institute.

30924. Have you any compound where cases can stand?—Not attached to the Research Laboratory.

30925. You have got a dispensary in Nagpur I take it?—Yes.

30926. Do you suggest that there should be animal wards attached to the research section in addition to the compound attached to the local dispensary?—Yes.

30927. You do not suggest merging the local dispensary with the Research Institute?—No.

30928. That could not be done?—That could not be done. We are not allowed to take and retain in the dispensaries animals suffering from contagious diseases.

30929 You have seen in the matter of animal husbandry and the improvement of breeds both the system where an officer of the Veterinary Service is charged with the duty of administering the work and the system where the Agricultural Department undertakes the responsiblity. Which do you prefer?—Judging by results, I should prefer the Civil Veterinary Department to the Agricultural Department.

30930. You prefer the Veterinary Department to be in charge of animal husbandry generally? Is that your idea?—Yes, on principle.

30931. What about practice, which after all is the important thing?—I do not think it would be practicable in a Province like this.

30932. Then you would leave things as they are in a Province like this?—Yes

30933. Do you distinguish between the conditions in this Province and conditions in the Punjab?—Yes.

30934. Would you tell us how they differ?—In the Punjab an entirely different animal is required. The fields are small in this Province and smaller types of animals are required than in the Punjab.

30935. I understand the problems are quite different, but I do not see why the difference should apply in this matter of a decision as to whether the Agricultural Department or the Veterinary Department should take charge of animal husbandry?—I think in a sense it is entirely due to luck. I think they have had particularly good men in the Punjab, who were able to take this work up. It is not a job that everybody can take up. There are veterinary men who seem to be specially useful at this kind of work.

30936. What you mean is that you would not like to disturb the existing arrangements in this Province?—Not in this Province

30937. I understand that you attach great importance to the public health aspect of the veterinary work. Do you think it is likely to be a field of growing importance?—Yes, I think so.

30938. Do you think that future research is likely to show a considerable number of diseases shared in common between man and animals?—Not so much that as that the present diseases which are recognised need a tremendous amount of work.

30939. You mean diseases like tuberculosis, parasitic diseases, intestinal paresites and the like?—Yes.

30940. On the whole you appear to be satisfied with the services rendered by the Muktesar Institute?—Yes. I am quite satisfied.

30941. You do not complain seriously of the delay in obtaining the serum?—No.

30942. Considering the magnitude of their task, do you think they discharged it satisfactorily?—Excellently.

30943. You would not suggest making serum in provincial institutes at this stage?—Not at this stage, so far as this Province is concerned.

30944. It is very expensive to prepare?—Yes.

30945. Is there much demand for preventive inoculation against rinderpest in this Province?—Yes, a tremendous demand.

30946. That is all for the simple and not for the simultaneous method?—Yes. The serum-alone method is the one used in this Province.

30947. That, of course, gives a very short period of immunity?—Yes.

30948. Is it the question of expense that prevents you from recommending the simultaneous method for general purposes, or difficulties of administering it?—Indirectly it means a tremendous increase of staff to carry out the simultaneous method.

30949. Have you attempted the simultaneous method here?—Not at all.

30950. You think that it is a sound policy?—Yes.

30951. You are considering the advisability of such a step?—Yes. In fact the matter is before the Local Government.

30952. You have to ask the Local Government whether they are prepared to change the present method to the simultaneous method?—I should always do so.

30953. Have you any ideas on the improvement of the cattle breeds in the Province which you would care to lay before the Commission? Is it a problem to which you have applied your mind?—Being a subject taken up entirely by the Agricultural Department, I would prefer not to make any statement regarding it.

30954. You would probably agree that the condition of many of the cattle that one sees on the roads here is deplorable?—That must be so, there is no means of getting rid of it.

30955. I understand that there is close and intimate touch between your own department and the Department of Agriculture?—Yes, we have always worked very well together.

30956. How are these officers who are working in the dispensaries under District Boards carrying out their duties? Are you satisfied with the manner in which they are working?—I am satisfied.

30957. Are you responsible for inspection?—Yes.

30958. What is the pay of your inspecting staff?—A Veterinary Assistant Surgeon starts on Rs. 60 a month, rises to Rs. 90 a month, and after that there is the selection grade.

30959. Have you had many complaints against Veterinary Assistants from cultivators directly or indirectly?—Very seldom.

30960. *Sir James MacKenna*: In reply to the Chairman, you gave a statement of the provincial sanctioned strength. Would you say that that was a fairly generous establishment for the size of the Province as compared with other Provinces which you have been in?—No, I think it is very small.

30961. It does not come up what you consider your provincial requirements ?—No, not at all.

30962. And you work both systems ; you have got itinerant Assistant Surgeons and fixed Assistant Surgeons in charge of dispensaries. What is the proportion of officers employed on each of these sides ?—Roughly, 33 per cent are itinerant men and 66 per cent are stationary.

30963. Do you approve of that proportion ?—I do not entirely approve of it, but it is a matter of expediency ; one must have a man in the dispensary, whereas it is not absolutely essential that you should have a touring man.

30964. Have you formed any idea in your own mind what establishment would be suitable for this Province ? Have you thought out a scheme ?—I have sent a scheme up to Government for the provincialisation of the department.

30965. What about Imperial officers in the way of Deputy Superintendents ? You would not increase them much, I suppose?—I should have to ask for a large increase of Imperial officers, certainly one for each Division.

30966. That would be 5 ?—Yes, of course, if simultaneous inoculation has to be carried out, there would have to be officers on special duty, and also in connection with the possible Research Institute.

30967. What is your idea about the ultimate expansion of the Veterinary Assistant's sphere of activities ? What area would you take as the minimum average area which he should work ?—I think there should be room for at least two in each tahsil.

30968. One stationary and the other itinerant ?—Yes.

30969. Have you seen the report of the Burma Agricultural Committee, which sat 18 months ago, in which a considerable expansion of the Veterinary Services was put forward ?—I am afraid I have not

30970. You might write for a copy ?—Yes.

30971. Is the incidence of cattle disease pretty heavy in this Province ?—It is in some years.

30972. Is it rinderpest ?—Yes.

30973. Have there been many outstanding epidemics in recent years ?—There was a fairly bad epidemic last year.

30974 Were the figures of mortality very high ?—The mortality is comparatively small even from rinderpest. I should put it at about 50 per cent mortality. The cattle of this Province seem to have a tremendous natural immunity.

30975. You have a good deal of trouble from your borders ?—That is one of our chief difficulties.

30976. So that a large amount of your itinerating Veterinary Assistants' work is veterinary policing?—I do not believe they do very much in that way.

30977. You are rather badly situated, right in the midst of Indian States ?—Yes. One could clear a district practically of rinderpest, but a few weeks after you get herds of animals coming through from some other places and spreading it all round.

30978. Do you think there is much rinderpest amongst your jungly animals ?—I think it is quite possible.

30979. It is a potential source of infection ?—Yes.

30980. You suggest the setting up of a Provincial Veterinary Research Institute ?—Yes.

30981 Do you think of linking it up with the Public Health Institute ?—It is to be built ; the scheme has been put through, but unfortunately something has held it up.

30982. Would you place the building of the Veterinary Research Institute along side the Public Health Institute ?—Yes.

30983. You think it is better linked up with the Public Health Institute than with the Agricultural College ?—Yes.

30984. Because you are working on similar sorts of subjects?—Yes.

30985. *Prof Gangulee*: Besides rinderpest, what are the chief cattle diseases in the Province?—Anthrax, haemorrhagic septicemia, blackquarter, and the various forms of piroplasmosis.

30986 You have no foot-and-mouth disease?—Yes, we have.

30987. Is it in a very bad form?—No; it is usually of a very mild type.

30988. What about non contagious diseases?—They are treated in the ordinary way at veterinary dispensaries and also by the men who go out on tour.

30989. Are you satisfied with your reporting agency? Can you tell us how an outbreak is reported?—I am not at all satisfied with it The report is usually furnished by the *patwari*, who is a very hard worked official, and he probably has control of several villages; by the time his report reaches us, considerable delay has usually occurred. A system has been introduced of providing post cards for the reporting, and it certainly seems to be a very good system, it has improved reporting tremendously.

30990. What time does it take for a case to be reported?—I should think the average time is 10 days.

30991. That difficulty can perhaps be remedied by having more reporting officers in the country?—I think so.

30992. You have a laboratory staff here, what are their qualifications?—The laboratory staff attached at Nagpur is one Deputy Superintendent; he has the ordinary qualifications of the veterinary college graduate in India. He is a graduate of a veterinary college in India, and in addition to that he has taken a few months' course at the Muktesar laboratory.

30993. They do the routine work and the diagnosis of disease?—They can diagnose diseases from films submitted to them.

30994. If you had had a well-equipped veterinary laboratory, what particular item of research would you have undertaken?—Piroplasmosis is the most important at the present time.

30995. You have given three interesting tables in your report, and you preface your remarks by saying that ignorance, apathy and, where the cow is concerned, religious prejudice have been the main stumbling blocks to the diffusion of veterinary knowledge, and yet, I find there is a great deal of improvement. For instance, with regard to your inoculation work, from 1901 to 1905 you had only 1,428 cases; for the period 1920-25 the number is 19,757. That shows that a good deal can be achieved by propaganda? Undoubtedly

30996. Then, would you lay the whole blame at the door of the people's ignorance, apathy and so on?—I think it is the main cause.

30997. Judging from the figures that you have given us, the number of your inoculation cases, the cases treated in dispensaries, and also the number of castrations, it seems to me that it only indicates that a great deal could be achieved in spite of ignorance, apathy and religious prejudice to make the Veterinary Service popular?—I think that refers particularly to inoculation, not to treatment.

30998. The number of treated cases has also increased. From 29,000 cases in 1900 1904 it has increased to 429,000 in 1920-25; that is a decided improvement?—Yes.

30999. You state here that you have a scheme for providing a Research Institute in Nagpur; could you supply the Commission with the details of the scheme which you presented to Government?—Certainly, I will

31000. Is there any private veterinary practitioner here?—No

31001. Do you notice any periodicity in the outbreaks of rinderpest?—Yes.

31002. Do you find that the monsoon or other conditions have any special effect?—It does not come at any particular time of the year, it seems to come in waves every five years; I do not think the climate or the weather has anything to do with it.

31003. How do you treat foot-and-mouth disease cases in your laboratory?—They are treated only in dispensaries and not in the laboratory. One of the chief duties of the Assistant Surgeons is the treatment of these cases.

31004. How are they treated? According to Col. Walker's method?—If you mean the subcutaneous injection of iodine, we have tried it, but it is not a good method. The ordinary method is to wash out the mouth with some material and disinfect the feet.

31005. Is there really a demand for veterinary education here?—Yes. At the present time, I have had roughly 60 applications for six or seven scholarships which are given to students of the Bombay College

31006. Do you give lectures to the students in the Agricultural College?—I do not.

31007. Who does that?—The Veterinary Inspector, who is lent to the Agricultural Department and also the Veterinary Assistant who is in charge of the dispensary.

31008. What are their qualifications?—They have the qualification of graduate of an Indian veterinary college.

31009. *Mr. Calvert*: I think you informed the Chairman that the success of the Hissar Cattle Farm was largely due to there being good men in charge?—Yes.

31010 Do you think the opportunity afforded in the Punjab has attracted good men there or do you think it is merely luck that we have had good men there?—I do not think it can be due to the opportunities because I know of very few men who have been transferred to the Punjab at their own request from any other Province. I think most of the men there have been posted right away to the Punjab on appointment; I think possibly a good deal is due to the fact that their work is appreciated more in the Punjab than in other Provinces.

31011. That stimulates them to greater activity?—A great opportunity like Hissar makes men more keen.

31012. Is there in the Civil Veterinary Department any lack of good men to take over cattle-breeding?—No, I do not think so; I think there are plenty of them who would be willing to do it

31013 *Sir Henry Lawrence*: Are there many *pinjrapoles* in the Central Provinces?—I do not know them by that name. Do you mean places where old and decrepit animals are kept?

31014. Yes. What do you call them?—They are called *gowrakshans*. There is one in Nagpur.

31015. Do they ask for the advice of officers of your department?—No.

31016. You have no relations with them at all?—None whatever.

31017. Do you think it would be possible to do anything to improve the lot of cattle by getting into touch with them?—I do not think so, because I do not think that class of cattle could be improved; they are very old decrepit cattle.

31018. Have you ever visited any *pinjrapoles*?—No.
There is a big field of work opening for that in Bombay.

Sir S. M. Chitnavis. There is only one in this Province; it is at Nagpur.

31019. *Sir Henry Lawrence*: Do you get your recruits from the Veterinary College in Bombay?—Yes.

31020. Entirely?—No. We get men for this Province from Bombay; they are sent there with Government stipends and scholarships.

31021. From where else do you recruit?—From Madras, the Punjab and Bengal.

31022. Can you say whether you find one class of recruit better than another?—I can certainly say that the men of the Punjab are not so good for work in this Province as the men from Madras.

31023. Do you find that the Madras Institution turns out the best men?—For this Province, undoubtedly.

31024. How do they compare with the men turned out from Bombay?—They are much better; the knowledge of English of the Madras men is so much better and their education is so much superior.

31025. Then why do you not send your stipendiaries to Madras rather than to Bombay?—Because the Madras course is not considered quite so suitable for them; their knowledge of English would not perhaps be good enough for them to take the Madras course; besides, at Madras they insist on the Matriculation as the entrance qualification.

31026. If you insisted on that standard you would not be able to get recruits?—I can now, but during the last few years I should not have been able to get them.

31027. I see from your note that you are making very good progress in sterilising unfit bulls?—Yes.

31028. Do you think that will have an appreicable effect on the improvement of stock in time?—I think it must.

31029. Do you experience difficulty owing to religious scruples in the matter?—Not with regard to castration; the only difficulty we have to deal with is that certain castes, such as the *Mahars*, have been so accustomed to carry out that work that possibly they might give a little trouble and try to prevent our men doing it.

31030. Because of the loss of their employment?—Yes, I do not quite know what the system is, but I suppose they were given hides in return for what they did.

31031. *Sir Thomas Middleton*: I think you expressed the view that on the whole the veterinary man had been more successful in the management of cattle breeding enterprises in India than the agriculturist; is that your opinion—Only in one particular Province, the Punjab; I was not speaking generally.

31032. You would agree, I think, that the actual training of the veterinary student does not give him much instruction in the management of healthy animals?—Not the average student trained in India.

31033. Or the average student trained in England?—He certainly has to study a good deal of hygiene and animal breeding and matters connected with it.

31034. One does not see many cattle at the Royal Veterinary College, for example?—No, being in London, I do not think, one could reasonably expect it.

31035. Do you find them in any other veterinary college?—I do not think they would be found in any veterinary college.

31036. The point is that if a veterinary officer is training for this type of work he must be apprenticed somewhere after his veterinary training, either on a farm in this country or on a farm in some other country where cattle-breeding is a business?—In the ordinary way a student at Home goes out to see practice during the vacation time, and on those occasions he comes very closely into touch with the work at breeding farms.

31037. It may be a good district or a bad one?—Yes, that may be so; it depends entirely on whether he goes in for country or town practice.

31038. Would you not agree that if there was any idea of utilising veterinary graduates for such posts, they ought to have a period of apprenticeship under a capable manager in this country?—I think that would be absolutely necessary.

31039 Does the absence of a veterinary college place you at any disadvantage in your own department in recruiting the men you want? You have a choice of recruiting from all the colleges in India?—Yes.

31040. If you find Madras men the best for your purpose you can go to Madras, or you can go to Bombay if you prefer Bombay men?—But we cannot depend on the supply being sufficient.

31041. Does it mean that these local colleges, Madras and Bombay, select the best men for their own Province and let you have the balance?—Undoubtedly.

31042. Is that what happens?—Yes.

31043. You might get over that by sending them a larger number of scholars; you send at present seven scholars?—Yes.

31044. Could you not overcome your difficulty by sending a larger number of scholars from the Province?—Well, it could be done, but it is a matter of increased expenditure.

31045. It would be very much less expensive than setting up a veterinary college to train the comparatively small number of men you require?—Yes, but there are other circumstances which prove that we ought not to have to depend on outside Provinces, because as a rule men in a particular Province are not very fond of going out of that Province for training.

31046. Do you not think it does them a lot of good to go out of the Province for training?—I think it would, but they do not seem to like it.

31047. What does it actually cost to immunise animals against rinderpest in such a district as Chhattisgarh, for example?—The cost of the serum is 6 annas per dose, it would not cost very much more; it would only mean the extra expenditure on the cost of virulent blood.

31048. It would involve, of course, the maintenance of additional local staff?—Yes.

31049. And that would add very much to the cost?—Undoubtedly.

31050. Can you give me any sort of indication of the cost per head for simultaneous inoculation, assuming a certain number of animals require inoculation?—At a Government agricultural farm, or out in the district?

31051. Under any conditions which you may select?—I am afraid I cannot supply that information, because we have not yet carried out simultaneous inoculation, and I have not really worked out the cost

31052. I am asking myself what percentage of the cattle in certain districts would be worth the cost of serum for simultaneous inoculation?—I think about 2 per cent. That is the sort of impression I had formed.

(The witness withdrew.)

The Commission then adjourned till 10 *a.m. on Tuesday, the* 25*th January,* 1927.

Tuesday, January 25th, 1927.

NAGPUR.

PRESENT :

The MARQUESS of LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.
Rai Bahadur Sir GANGA RAM, KT., C.I.E , M.V.O.
Sir JAMES MACKENNA, KT., C.I.E., I.C.S.
Mr. H. CALVERT, C.I.E , I.C.S.
Raja SRI KRISHNA CHANDRA GAJA PATI NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. C. U. WILLS, I.C.S.
Sir SHANKAR MADHO CHITNAVIS, KT., I.S.O } (*Co-opted Members*).
Mr. J. A. MADAN, I.C.S.
Mr. F. W. H. SMITH. } (*Joint Secretaries*).

Mr. C. J. IRWIN, C.I.E., I.C.S., Commissioner, Jubbulpore Dn.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—I have no suggestions to advance regarding agricultural research. With regard to the Veterinary Department, I need only refer to the last three reports on the Civil Veterinary Department of this Province where the necessity for a proper local veterinary research institute has been strongly urged. I do not think the Veterinary Department of this Province can do the best work possible without an institute for research, and proper accommodation for the keeping of control animals and the like.

QUESTION 2.—AGRICULTURAL EDUCATION.—I have no experience of special agricultural education. The only portion of this question on which I have any remark to make is as regards questions (viii) and (xii).

(viii) In the present state of development of local schools in this Province, I do not believe that ordinary school instruction in agriculture by means of school plots or school farms or nature study has been or will be of any value. The teacher is almost always a half-educated Brahmin with no interest whatever and no knowledge of agriculture. Ordinarily, the only source from which the village school boy in this Province is likely to learn anything about agriculture is from his parents and friends in his own village. But visits to demonstration plots managed by the Department of Agriculture, such as are now being arranged, may be of some use.

(xii) I do not quite understand what form of adult education is intended by this question. I believe the Agricultural Department are contemplating a wide use of the cinema. This will probably have effect as the majority of adults in rural tracts take no interest in obtaining education, and will be difficult, if not impossible, to educate except by example and through the eye.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) The only measures in question are field demonstrations.

(*b*) Field demonstrations can be made of wider effect if the officials in the Agricultural Department tour and preach to a sufficient extent in the villages

adjoining the site of the demonstrations. In this connection, it is very necessary to insist on complete co-operation between the officials of the Agriculture and Revenue Departments. Hitherto this co-operation has been insufficient although conditions are improving. The necessity for such co-operation cannot be too strongly insisted upon.

(*c*) I have already referred to the use of the cinema by the department as well as constant touring and co-operation with the Revenue Department. The whole point is to make the cultivator come and see the results of improved methods, but no amount of such demonstrations will be of any effect if it is not made clear that the methods recommended are (i) within the means of the ordinary cultivator, and (ii) are conducted on lands similar to the average land of the locality.

QUESTION 4.—ADMINISTRATION.—(*b*) Ordinarily, I should deprecate centralisation, but it is possible that with agriculture as a transferred department, subject to the whims of a possibly unstable public opinion, it might be desirable to make research as far as possible a central subject, leaving to the provincial departments the teaching of improved methods, the distribution of improved seed and propaganda.

(*c*) (i) So far as I have experience of them, the Agriculture and Veterinary Services, as at present constituted, are doing as much as they can, with the resources at their disposal.

(iii) *Roads and bridges.*—The improvement of agriculture in my view is very closely connected with the question of communications. In the Jubbulpore district, to take one instance only, the great part of the best land of the district is completely land-locked, and it is difficult to get the produce to any kind of market. If we give the cultivator good communications he can get more for his produce, and the more money he has, the more likely he is to adopt improved methods which would ordinarily be beyond his means.

(iv) Reliable reports about the monsoon would undoubtedly be extremely useful, especially in the cotton country, but at present I doubt if the forecasts obtainable from the Meteorological Department would be sufficiently reliable to make it worth while broadcasting them.

QUESTION 5.—FINANCE.—(*a*) The question of the financing of agricultural operations is developing of itself. Thus the Imperial Bank now advances money against produce lodged in the Bank's godowns so far to enable the producer to hold his crop against the best market. This is probably sufficient for the bigger cultivator; for the smaller men I can suggest no method but the steady development of the co-operative credit system. Any question of the alteration of tenure so as to enable holdings to be given security is presumably outside the terms of this reference.

(*b*) I do not think it is desirable to endeavour to extend the use of *taccavi*. The system is inelastic, and if money is thrust upon the cultivator on too easy terms, there is a risk not only of pauperising the borrower, but of losing a considerable amount of Government money.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) A cultivator may borrow money for a variety of purposes: for bullocks, for seed, for manure or for social celebrations in his family. For none of these purposes is he likely as a rule to put away money. The principal cause of borrowing, therefore, may be said to be an absence of a spirit of thrift. At the same time, it must be remembered that a great number of the smaller cultivators in the country are never very far from the margin of subsistence and any unusual expenditure is probably beyond their powers of saving.

(ii) For the ordinary cultivator, the source of credit is usually the small village moneylender or the landlord. These men operate largely on capital accumulated by themselves, but occasionally on funds borrowed from the larger moneylenders in the bigger centres.

(iii) The chief reasons preventing repayment are (*a*) general carelessness and lack of forethought, and (*b*) the same reason that accounts for a certain amount of borrowing, *viz.*, the fact that the small cultivator is living on the margin of subsistence.

I have also come across the curious reason which accounts also for failure to take up *taccavi*, *viz.*, the desire to remain on the books of the moneylender so that he will be ready to deal with the borrower on subsequent occasions.

(b) I can suggest no special measures for lightening the burden of debt. It might and probably would be desirable in most places to urge the Civil Judges to apply more freely the Usurious Loans Act; but the only way to get rid of rural debt is to make the people earn more and be more thrifty. Towards the latter result co-operative propaganda should help. At the same time, it must be remembered that in endeavouring to raise the financial condition of the ordinary rural population one's labours are always liable to be upset by the tendency of the rural population to multiply up to the margin of subsistence.

(c) I do not believe in measures to restrict the right of transfer except in very backward tracts. In more developed tracts, the only result of the present protected tenure in this Province is to cut down the amount of capital which the cultivator can obtain for the development of his holding. If a cultivator desires to transfer his holding, he will do so, and if transfer is restricted by the right of pre-emption given to a third person, the only result is that the cultivator will lose part of the value received on transfer, in order to shut the mouth of the third party.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—I have no real experience of excessive fragmentation. In general, I can suggest no special means for consolidation except co-operation. The chief obstacles in the way of consolidation are presumably general apathy and distrust and jealousy of each other among the cultivators. As regards question (c), on the face of it I should regard legislation to the effect that no contingent interests should be allowed to interfere with consolidation to be desirable.

QUESTION 9.—SOILS.—(c) This question is difficult to answer without concrete instances, as circumstances will vary according to the reason why the cultivable land has gone out of cultivation. In this Division, I understand there is a considerable quantity of land ruined by *kans* grass, and the Department of Agriculture are taking steps to eradicate this pest by mechanical ploughing.

QUESTION 10.—FERTILISERS.—(f) The only method possible is to prove to the cultivator that it pays him better to procure and use firewood than to use cowdung as fuel. It is difficult to prove this by any form of actual demonstration which would appeal to the cultivator, and until this can be done the efforts which have been made for many years to discourage the practice of using cowdung as fuel are unlikely to succeed.

QUESTION 11.—CROPS.—(a) (iii) At present, in this Province I understand the Department of Agriculture is succeeding in distributing a considerable amount of good seed by means of seed farms or arrangements by which certain large cultivators undertake to grow pure seed. An extension of these methods to procure pure seed is extremely desirable since the provision of pure seed enables the cultivator to make more money and thereby to improve his methods.

(iv) For the prevention of damage by wild animals, there is only one remedy, *viz.*, the extinction of the wild animals. Against this it is usual to urge a considerable number of more or less sentimental objections, but these are mostly based on out-of-date feudal ideas regarding the preservation of game. The provision of elaborate fencing is obviously an uneconomic palliative only. The problem of exterminating wild animals, particularly pig, is one which has not yet been tackled with any great success in any area of which I have any personal knowledge, but it should be possible with proper organisation, and with the assistance of the Forest Department to make the wild boar as extinct in India as it is in England.

QUESTION 14.—IMPLEMENTS.—(b) The condition precedent to the adoption of improved implements, as of any other improvement, is to enable the cultivator somehow to earn more money, so that he can put more money into his cultivation. Given this, continuous demonstration will end by convincing the cultivator of the value of improved implements; but if he is to take them up it must also be shown that they are reasonable in price and that they can be easily repaired in or near his village.

QUESTION 15.—VETERINARY.—(a) The Veterinary Department should certainly be independent, if the Director of Agriculture is to be a technical officer of that department. The only circumstance in which the Veterinary Department and the Department of Agriculture could usefully be combined under one head

is where the Director is a purely administrative officer. If this condition is not present it is far better to have the two departments separate under the control, purely in administrative matters, of the Secretariat.

(*b*) (i) My experience is that District Councils, under whom the veterinary dispensaries have been placed in this Province, are generally completely apathetic in their regard.

(ii) I do not think that these local bodies appreciate the value of the operations of the department. One frequently finds that the Veterinary Assistant, who is provided by the Provincial Government, is housed in a room in the local *serai*, where he cannot do his work properly. I have always held that the profit made on the operation of cattlepounds should be spent on veterinary dispensaries; but it is difficult to make the local bodies see that this money, which comes from the cattle of the district, should be spent upon them.

(iii) The control of dispensaries by the provincial authority would undoubtedly lead to greater efficiency. The only argument for leaving them under the District Councils would seem to be the educative effect of the managemnt of these institutions by the local representatives of the people. So far, however, I have seen no evidence that such an effect has been achieved.

(*c*) (i) and (ii) Full use is not made of dispensaries. There are no touring dispensaries in this Province, but Veterinary Assistants go on tour and treat animals while on tour, and as time goes on this touring and regular attendance at the villages where there are outbreaks of epidemic disease, should help to demonstrate the value of the work of the department.

(*d*) The present law probably goes as far as it is possible to go in regard to regulations dealing with contagious diseases of animals. The only measure I should like to advocate with regard to this Province in particular is some method of examination of herds from Indian States coming into this Province so as to exclude carriers of disease. Practical difficulties have hitherto prevented any measures of this sort.

(*g*) See my answer to Question 1.

QUESTION 16.—ANIMAL HUSBANDRY.—(*b*) (i) The overstocking of common pastures is one of the principal obstacles in the way of the improvement of cattle in this Province and particularly in parts of this Division. In the poorer villages, even the bullocks are left to pick up such a living as they can almost entirely from the village waste. More valuable bullocks and the plough cattle generally in the better cultivated areas are either stall-fed or given a considerable amount of extra food. As a rule, cows are not stall-fed at all. Old and useless cattle, owing to the sanctity of the cow, are left to die of old age, while still consuming a considerable quantity of the common food and thereby restricting the amount available for better class of cattle. The results to the agricultural stock generally can easily be imagined, specially to the breeding stock on which the production of the plough cattle of the future depends. As long as the prejudice against the elimination of unfit cattle exists, I can see no way of getting over this difficulty.

(ii) I know of no regular closed pastures in this Province, and the grass borders in tilled fields are generally negligible as a source of cattle fodder.

(*d*) There is almost an unlimited supply of hay to be obtained from the Government forests, provided the people concerned will take the trouble to cut it in time, and in the majority of tracts in this Division the cultivator if he chose to take the trouble could obtain a considerable supplementary supply of fodder for his cattle. I regard the utilisation of the existing supplies of hay, to be cut at the proper season when the sap is in it, as more important and desirable than the growing of fodder crops on land that might be used for food or commercial cropping.

(*e*) Landowners and cultivators will only take interest in these matters if it is shown in some way that there is a profit to be made.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*c*) As a rule, in this Province such industries as bee-keeping, poultry rearing, fruit growing, sericulture, pisciculture, lac culture, rope making, basket making, etc., would be precluded by caste objections.

(*d*) I do not greatly believe in the artificial establishment of such industries as are mentioned by Government. If it were possible to demonstrate the prospective profit from such efforts, and then get the people to take the matter

up for themselves, such industries would succeed. But, started by Government, they would almost certainly die as soon as Government influence is removed.

(*e*) I do not quite follow what is meant by this question. If it is intended that a man should work in a factory the greater part of the day, and employ his spare time on agriculture, the suggestion seems to be objectionable.

(*f*) I know of no rural industry in this Province which would repay intensive study.

(*h*) If the general wealth of the people can be increased, they will themselves take more interest in improving their environment; for the rest propaganda, assisted as I have suggested by the cinema, might achieve a certain measure of success.

QUESTION 18.—AGRICULTURAL LABOUR.—(*a*) (i) I am not aware of any area in which there is a surplus of agricultural labour. Where there is a shortage at harvest or similar busy times, the shortage is usually made up by seasonal migration. In large area of uncultivated land in this Province, it would be better dealt with by settlement with cultivators than by the importation of labour to work under the local capitalist. The obstacle in such cases as I have seen is the system of land tenure which is outside the terms of this reference.

QUESTION 19.—FORESTS.—(*a*) We are working up by degrees in this Province to the fullest utilisation of the forest lands. There is a certain amount of dispute at present as to the amount of grazing facilities which can be allowed compatibly with the preservation of a sufficient reserve of timber. The question is being dealt with by the new establishment for the drawing up of and revision of Working Plans. As long as the system is followed by which a revenue officer is invariably associated with the Working Plans Officer in order to deal with local requirements, I do not think the procedure can be improved upon.

(*b*) As a rule, the local cultivators can obtain firewood and fodder in sufficient quantities if they take the trouble. At present, I doubt whether any attempt to create a demand for extra firewood or fodder in areas at a distance from the forests would be successful. An attempt was made, I believe, a year or so ago to popularise baled hay in Berar, where there was a considerable shortage of fodder and I believe the experiment was unsuccessful.

(*e*) Any form of afforestation in the ordinary Central Provinces village area would be far too expensive to be thought of.

(*f*) I do not think that the forests are suffering from excessive grazing. The enthusiastic Forest Officer is apt to urge that his forests are overgrazed but over a great portion of the Province there is little danger of this.

QUESTION 20.—MARKETING.—I understand special statistics have been collected with a view to answering this question and I therefore offer no remarks.

QUESTION 22.—CO-OPERATION.—(*a*) The only remark I have to offer regarding this question is that I am convinced that in this Province we went too fast at the start, and the development of the future should not sacrifice quality to quantity.

(*c*) I agree that there should be some power of coercion in the case of such measures as co-operative consolidation of holdings. With regard to irrigation, under the long-term agreement system in force in this Province at present, where the occupants of the four-fifths of the irrigable land agree to come under the agreement system, the remainder are compelled to do so; and similar provision might be made in all such cases.

(*d*) I have no personal knowledge of any society.

QUESTION 24.—ATTRACTING CAPITAL.—The only way to attract capital to agriculture is to show that it pays. In certain cases, I believe, the Department of Agriculture has shown that with capital certain forms of agriculture can be made to pay handsomely. Similarly, unless the owner of land can be shown that an improvement will bring him in a definite profit, it is not likely that he will be persuaded to undertake it.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) The first necessity is to give the cultivator more money, by enabling him to sell his produce better, and to improve its quality by the distribution of pure seed or otherwise. But even then it is improbable that the ordinary cultivator will raise his standard of living, and the increase in wealth is likely to be absorbed by an increase in the population.

(*b*) and (*c*) I have read several economic surveys of typical villages, and the only result of every one of them appears to be to prove conclusively that the cultivating class is about to be ruined, and that there is no profit in agriculture. I have, in common with other Settlement Officers, come up against the same difficulty during the operations of settlement, where there was always an attraction in the search for the ideal average cultivator. The result of most enquiries made is the same, namely, to demonstrate that there can be no profit in cultivation of land; yet if this were so land could not change hands at the comparatively high prices at which it is transferred over a great portion of the Province.

QUESTION 26.--STATISTICS.—So far as I am aware, the present methods in vogue in the Central Provinces for the collection of agricultural statistics are sufficiently accurate for all practical purposes.

Oral Evidence.

31053. *The Chairman:* Mr. Irwin, you are Commissioner of the Jubbulpore Division in the Central Provinces?—Yes.

31054. You have provided the Commission with a note of the evidence which you wish to put before us. Would you like to make any statement at this stage?—No; I have no particular statement to make.

31055. Would you tell the Commission what you take to be the responsibilities of an officer holding your present post?—With regard to agriculture?

31056. Yes, and economic development generally?—With regard to agriculture his duties are largely confined to inspection and he can also help the officers in the technical department by making suggestions with regard to any difficulties they may have with the people. I am not quite sure what is meant by his responsibility with regard to economic development; it is rather a large field.

31057. Take the question of responsibility a stage lower; what are the duties and responsibilities of a Deputy Commissioner in that direction?—They are very much the same. The Deputy Commissioner touring in his district will take notes of the requirements of the people and will bring them to the notice, if necessary, of the technical departments concerned.

31058. But broadly speaking, it is his duty to take an interest in the economic development generally?—In touring his district he would see these things.

31059. What is the area of your responsibility, your Division?—I cannot tell you the actual number of square miles off-hand; it consists of 5 districts.

31060. Is it all malguzari settlement?—There is a certain amount of ryotwari as well, but not a very great deal. The general system is malguzari, with ryotwari settlement in the areas taken recently from forest.

31061. Under the malguzari system, what is the smallest area in which you have a direct representative? You have your Deputy Commissioners?—Yes; under the Deputy Commissioner there is the Tahsildar and under the Tahsildar there is the Revenue Inspector; I should think the Revenue Inspector would probably be the lowest representative of the Government, but the *patwari* who is the village accountant and who keeps the land records of the village is actually the lowest. He is now practically a Government servant and he is paid direct by the Government.

31062. These things differ between Province and Province and it is interesting to discover any discrepancies. Now turning to your note, I judge from your answer to our Question 2, Agricultural Education, that you regard the imparting of literacy as the first objective of the primary system of education?—Yes, to a certain extent. I consider what the ordinary agriculturist in this country requires is sufficient literacy to be able to follow simple accounts, to be able to check his accounts with the moneylender and so on.

31063. And probably to read the leaflets distributed by the Agricultural Department?—I would not go so far as that. I doubt really if those leaflets reach the actual cultivator very much. perhaps the landlord but hardly the tenant.

31064. In answer to Question 2 (xii), you say you do not quite understand what form of adult education is intended. What was intended was this: adult education in its widest sense; that is to say, the imparting of literacy to adults. Have you experience of any experiment of that sort?—No, I have none.

31065. In answer to our Question 3, Demonstration and Propaganda, would you tell the Commission what your opinion is as to the calibre of the men who are engaged in demonstration? Do you think they are of the right stamp?—I have not very great experience, to tell you the truth. I have not seen a great deal of the actual work of the Agricultural Assistants in the field. I have a certain knowledge from hearsay, but I have no personal experience on which I would like to base an opinion.

31066. Then you suggest that there might be co-operation between the Agricultural and the Revenue Departments. You express the view that hitherto the co-operation has been insufficient although conditions are improving. Would you develop that a little?—What I meant was this: I have had complaints from some Deputy Commissioners that they did not know what was going on, what the technical departments were doing. I think the fault in regard to that is on both sides, to some extent. On the other hand, there are Deputy Commissioners who insist on taking local Agricultural Assistants on tour with them; it is obviously the proper thing to do. It is a question of development, I think; I doubt if one can lay it down in rules.

31067. Do you think that demonstration and propaganda have had a fair share of the attention and funds of the Department of Agriculture as compared with research proper?—I do not know how the expenditure compares; I have not looked the figures up; but I know the department is endeavouring to get a very much larger number of demonstration plots and that Government, a year or so ago, sanctioned a certain amount of money to provide new demonstration plots.

31068. You then point out the importance of good communications to agriculture. Have you any suggestions to make for the financing of improvements in communications?—Here in this Province I gather for many years to come we shall not be able to finance communications from revenue, at least to finance the proper extension of communications from revenue. Hitherto we have endeavoured to build our roads from revenue and I think probably the line we should take in the future is to build a certain number of new roads from loans, as we do on a small scale in the case of forests at present; forest roads are largely built from the Forest Loan Fund at present.

31069. In other words, you would borrow for the capital charge and put the maintenance on the revenues?—Yes; there is a slight difficulty about that in this Province, that is, whether we could afford a very extended programme of road development if it was going to mean a very large recurring charge for maintenance, because our revenues are not very large.

31070. Still it has been a more progressive method than to attempt to finance both from the revenues?—Yes.

31071. You take rather a pessimistic view of the value of the forecasts obtainable from the Meteorological Department. Are you familiar with them?—We do not get them really very much here. My knowledge, I am afraid, is merely from the daily newspapers.

31072. In answer to our Question 6, Agricultural Indebtedness, I am interested to see that you had come across the curious explanation for the fidelity of borrowers to the moneylender, that they are anxious to keep on the books of the moneylender so that they will be able to borrow whenever they require a loan?—Yes.

31073. Have you ever heard it suggested that a moneylender will refuse to lend if the borrower has been borrowing from other sources?—It was given to me as a reason only this year for the tenants not wishing to take *taccavi*, that is loans under the Agriculturists' Loans Act. For instance, if they borrowed from the Government this year and next year they went to the moneylender, he would say 'oh, yes; you did not borrow from me last year; I will put up the interest this year'. That is what they are afraid of, I understand. How far it is true I do not know, but I believe there is a good deal in it.

31074. A sort of strike of moneylenders?—Yes, to some extent.

31075. In the matter of the use of cowdung for fuel, have you noticed any change for better or for worse since you have known this country?—No; I have noticed no change.

31076. And you do not think it is any worse than it was?—No, it is not worse.

31077. In answer to Question 11, you say there is no reason why the wild boar should not be eliminated just as it has been in England. It would be somewhat a tougher job, would it not?—Yes. I understand in Bombay they had extreme difficulty; but in this Province I think it could be done.

31078. *Sir Henry Lawrence:* Why?—For one thing, you can get hold of people who are professional *shikaris*. There are a certain number of wandering tribes who could be employed; they could be organised easily.

31079. Do many of these people eat pig?—Only the very low castes. The wandering tribes and the aboriginals also eat pig.

31080. *The Chairman:* You think these feudal ideas regarding the preservation of game are apparently responsible for preserving animals that do damage to crops?—Personally I am very keen on *shikar*. But at the same time when one sees the damage that is done by the deer on the edge of a forest which is preserved one cannot help having qualms of conscience about that preservation.

31081. Are pigs preserved?—No.

31082. Do the carnivora do a great deal of damage to the cultivator?—They kill a lot of cattle.

31083. Do you think that more might be done to reduce their numbers?—I do not know that very much more could be done. I think that people are quite keen enough in killing tigers and panthers if they can. It is a difficult job and at the same time expensive.

31084. It is not a very lucrative business at Rs. 15 a head, is it?—No. But I doubt if any material raising of rewards would have much effect. The reward used to be Rs. 50 for a tiger and Rs. 25 for a panther, but I do not think that it made any difference one way or the other. In fact that was why the rewards were reduced.

31085. Would you turn to your answer to Question 15 on the Veterinary Service? You are talking there about the local dispensaries. You say "The control of dispensaries by the provincial authority would undoubtedly lead to greater efficiency. The only argument for leaving them under the District Councils would seem to be the educative effect of the management of these institutions by the local representatives of the people." You do not think that you see any evidence of such educative influence?—No; whenever I have inspected places where there are veterinary dispensaries I have endeavoured to interest the members of the local authority in them, and I have always felt that I was not doing so,—that I was not having any success in that direction. I found it very hard to make them take any interest in the work of the Veterinary Department.

31086. How long has this experiment been in vogue?—I could not tell you off-hand. But I think it has been in existence for a very long time.

31087. *Sir Henry Lawrence:* I should think from the beginning of the District Councils, that is, about forty years ago?—I do not know really.

31088. *The Chairman:* In answer to Question 17, you are talking about the caste difficulties attached to certain spare-time occupations. Do you notice any change in the outlook of the cultivators in that direction? Do you think these caste prejudices are any less than they used to be?—I cannot say that I have noticed any tendency in that direction.

31089. Under Question 19, Forests, you say that you do not think the forests are suffering from excessive grazing?—Yes, that is my impression.

31090. You do not think that the future prospects of forests would in fact be damaged by grazing areas?—That is a difficult question for the ordinary layman to answer. I think that it is a question more for the sylviculturist.

31091. *Sir Henry Lawrence:* Do you find that the District Council, when it discusses the question of spending money on roads or schools, gives preference

to schools invariably?—Yes, they are inclined to spend decidedly more money on schools. At one time I used to analyse the expenditure on schools and roads of the District Councils of this Division with a view to seeing whether the proportion which formerly existed between the road cess and the school cess was observed, and I found that they had invariably encroached on what I considered to be the proportion which should have been spent on roads.

31092. Do you think they would have been wiser if they had spent more on roads?—Yes, from the point of view of the agriculturist.

31093. We are trying to regard the whole problem from the point of view of the agriculturist at present. Do you regard roads as an important factor in the education of the agriculturist?—I think that when he is able to get about more, he will take more interest in general education.

31094. So that it may be regarded as a condition of success?—Yes. There is another point I should like to mention. I think if we had communications more highly developed, there would be less relapse into illiteracy, of which there is a very considerable proportion now.

31095. Are there any areas here so shut off through inaccessibility that the people are distinctly more backward in intelligence than they were?—Yes, I think so: for instance, large portions of Chhattisgarh where communications are bad.

31096. You are on the eve, I understand, of a more progressive policy in regard to road development?—I understand that that is so.

31097. Will that be financed from provincial revenues rather than from District Council revenues?—I have no information about that. I have heard it suggested that the financing of roads from loans should be taken up, but how far the question has got I do not know.

31098. That would be in the hands of the Minister, I presume?—I think so. The District Councils in this Province have not succeeded in collecting a very highly trained technical staff and the consequence is that any engineering work of any importance would have to be carried out by the Public Works Department. They have not got the staff to do any work of importance.

31099. But if you are going to do this by means of loan money, that loan money would be borrowed by the Province?—I take it that that would be the case.

31100. And will not devolve on the District Council?—That is what I should understand, but as I say I have not got any definite information on the subject. That is what I should certainly advocate.

31101. Then in regard to the question of caste objections, Question 17: Is your population in this Province very much handicapped by caste objections?—I was really thinking in regard to the particular subsidiary industries mentioned; for instance, lac. There are comparatively few people who deal with lac. In some places even the Gonds will not touch it.

31102. From religious prejudices?—I could not say exactly, but I know it has something to do with the social or religious prejudices of the people.

31103. What are the classes that do handle lac?—The *Mahars* have no objection to lac and there are several other castes as well.

31104. Are the *Mahars* a considerable community in this Province?—Yes, the *Mahars* together with the similar castes in the North, namely, the *Mehra* and the *Chamar*, and the lower castes generally would have no objection to that sort of thing.

31105. What do they represent in numbers? Ten or twenty lakhs?—I am afraid I should have to look that up. There are plenty of them.

31106. So that the lac industry is not in any way handicapped by the absence of people who are prepared to deal with it?—No. The ordinary cultivator with a little land would generally be a Hindu and he would object to that business.

31107. Take poultry rearing: What communities are there that refuse to touch poultry?—I think that a good many Hindus of good caste would object to deal with poultry, but I could not tell you off-hand.

31108. Have you many Mahommedans here?—Not a very large proportion. I am afraid I have not got the figures ready to tell you the exact proportion.

31109. I do not want the exact proportion. What I wanted to ascertain was whether there were a sufficient number of people who had no prejudices on each particular point?—There are certainly a sufficient number of people to make it possible to start a poultry rearing industry, not in the ordinary village but in centres. There are a considerable number of people who would take to poultry rearing.

31110. Then as regards fruit growing: Is there any caste objection to that?—That is a question more of capital than of caste prejudice.

31111. Has pisciculture at all advanced in this Province?—No: the *Dhimar* caste do it chiefly, but it has never been organised; there is no pisciculture but they do catch fish. I have never heard of anybody stocking the waters with fish spawn.

31112. Is not rope and basket making a hereditary occupation?—Rope making is practised, I think, by several castes. In a great many villages you see people making ropes as you go along.

31113. What do they use?—*Sann* hemp.

31114. Is the lack of interest in veterinary dispensaries linked up with the lack of interest in the tending of cattle generally?—Yes.

31115. Can you explain why, in the Central Provinces, so little interest is taken in the keeping and improvement of cattle?—Beyond a general lack of practical appreciation of their value to their own interests, I cannot assign any real reason. In the more advanced parts of the Province, down in Berar, the people do take a lot of care of their cattle, and they are keen on good cattle.

31116. Do they breed any cattle?—They do not breed very many good cattle, and I think they import a variety of breeds. I see enormous herds both of ordinary cattle and buffaloes coming into the Province from the States of Central India. There is a good deal of replacement in that way, but the local breed is not as a rule good. They used to have large herds of good cattle coming down from the district of Chanda to graze in the forests of Balaghat district, and some of them were good. They kept the herds fairly pure, but for one reason or another that system has nearly died out. They do not breed those cattle so much as they used to.

31117. You have a very large cattle population in the Central Provinces?—Yes, but it is largely bad.

31118. It is chiefly useless?—Yes.

31119. You do not suggest that there is any caste objection to the maintenance and improvement of good cattle?—There is no caste objection.

31120. On the question of roads and schools, can you explain what is the reason of the desire to extend schools to an extent beyond what is reasonable in the financial circumstances of the District Council?—Beyond the fact that I think the educated classes have a general idea that the more they do for education the more good they are doing to the country, I cannot say that there is anything more. I do not think they appreciate the relative importance of the two. They want to educate a certain number of people before they are fit for it.

31121. In the District Councils, is there any idea of shifting the burden of keeping the roads on to the provincial revenues?—They are always asking for grants. They are trying to get as much money as they can out of provincial revenues for roads, but I think they rather like the idea of having the management in their own hands.

31122. From the point of view of patronage?—I think it gives them a sense of dignity. I think it makes them feel that they are more important, if they are given an important job to do.

31123. Have any of the District Councils levied additional cesses for the schools?—The cesses in the Central Provinces are now amalgamated. No portion is earmarked definitely; that system has been abolished. One of the District Councils in my Division has put on a slight extra cess in order to raise more general revenues, but they have not earmarked that extra revenue for any specific purpose.

31124. How much additional revenue have they been able to get in that way?—It is very small indeed, only a few thousand rupees. The total increase in revenue, as far as I remember, was well under Rs. 10,000.

31125. Was that increase from 1 anna to 1½ annas in the rupee?—I think it was a question of some pies increase.

31126. So that, they have not shown their desire for better schools by paying any additional sum towards it?—They do not like to tax themselves very much.

31127. Do you know how many districts in the Province have levied anything additional for the purpose?—I could not say. As a matter of fact, I think in Berar they have definitely levied an extra school cess in several district.

31128. Could you find out and let us know*?—I could; I think it will be in the last District Council Report.

31129. This increased cess is under your recent Local Self-Government Act?—Yes.

31130. *Sir Ganga Ram:* Are the schools free to agriculturists?—Yes.

31131. They do not have to pay any fee?—Not in primary schools.

31132. When do they begin to pay fees?—They pay a small fee (I could not tell you the amount) in the Anglo-vernacular and vernacular middle schools.

31133. In primary schools they do not pay anything?—No.

31134. *Sir Henry Lawrence:* Since when?—So far as I know, they have never paid any fees for primary education.

Sir S. M. Chitnavis: For primary education, they do not have to pay any fees even in Nagpur.

31135. *Sir Ganga Ram:* When you spoke of the scarcity of roads, did you refer to *kutcha* roads, or fair weather roads?—The village tracks in a great many cases are very bad, and they cannot be used once the rain has started. What I was really referring to was made roads. They need not necessarily be metalled. In this Province, we make a lot of roads out of murum or gravel. For purposes of ordinary traffic murum roads are very often suitable, if the traffic is not very heavy.

31136. Whether they are metalled or unmetalled, are they sufficient?—No.

31137. It has been represented to us that in some places the people have to go 60 miles for disposing of their produce?—Yes, and in some places they cannot use wheeled transport at all.

31138. Are the markets not so near that they can go to them?—I can give you an example from which you will see what I mean. Rice from Bilaspur is very largely brought up to Katni in the Jubbulpore district by *banjaras* on bullocks.

31139. What is the distance?—About 100 miles.

31140. Is there no railway serving the district?—There is a railway from Bilaspur to Katni. I have seen *banjaras* with their herds of cattle going down to Katni.

31141. Is it due to the high railway freight?—It is due to the difficulty of getting the produce from the interior of the Bilaspur district to the railway. I believe there is only 50 miles of metalled road in Bilaspur district.

31142. The railway is not very popular for goods traffic?—I think it would be popular, if you could get the roads there.

31143. There may be objection on account of the high railway freight, or there may be trouble by the railway staff?—No. I do not think that is the reason. It is due to the absence of roads.

31144. Otherwise, how can pack animals compete with the railways?—I do not know. The cultivator probably gets less value for his produce by having an extra middleman. If he could send his produce to a market near his village,

---

*The cess has been imposed by the District Council, Raipur, in two villages from the 1st October 1925, and in nine villages from the 1st October 1926. The total amount raised in the former villages is Rs. 78, and the assessment for the latter villages is Rs. 769. The cess was also levied by the District Council, Damoh, temporarily for one year in 1924-25 and the total amount raised was Rs. 7,173-13-0.

and if there were a metalled road from that market to the railway station, I think the cultivator would get a much better price.

31145. There is not a metalled road from Bilaspur to Katni?—They go across country, more or less. That is the point of the *banjaras*, that they can go across country.

31146. *Sir Henry Lawrence:* Does the *banjara* buy the stuff from the cultivator?—I think so. I think he is probably financed to some extent by traders in the market he eventually comes to. The *banjaras* take down salt and sell it, and I think they do a certain amount of exchange also.

31147. The cultivator does not accompany the *banjara* caravan to sell his produce at a distant market?—No; the *banjara* buys it; he may be financed by a trader.

31148. *Sir Ganga Ram:* Is your Division well served by railways? Are there any branches under contemplation?—I think we are fairly well-off as regards railway communication, but the trouble is feeders to the railway.

31149. Is there lack of feeders?—There is lack of feeder roads; I do not mean feeder railways.

31150. Are there any railways under contemplation in your Division?—No, I do not think there is anything at all like practical politics.

31151. You say that metalled roads should be made from loans. How are the interest and maintenance charges to be met? Would you be in favour of levying tolls?—It might be done where one had to construct a large and expensive bridge, for instance.

31152. Would you be in favour of levying tolls to pay for the interest and maintenance charges?—If it were for a bridge over the Nerbudda for instance, it is one of the things which might be done.

31153. That is only for getting across the bridge. Supposing there is no bridge, but only a metalled road of 60 miles in length, would you be in favour of imposing a toll at certain fixed intervals to pay for the interest and maintenance charges?—No, I should not make that the exception.

31154. How is the interest to be paid in that case? The interest will then be a burden on the land revenue?—Yes, I think it certainly should be so. I think the landlord will benefit very much more than anybody else by the extension of communications, and I think he can very well pay for it.

31155. *Sir Henry Lawrence* Have you no road tolls in this Province?—No, except in the case of ferries. In certain cases where there is no *pucca* bridge across a river we build a temporary bridge in the cold weather, and very often there is a small toll in connection with that.

31156. The system of levying tolls on roads is not in force here?—I know of no place where it is in force.

31157. *Sir Ganga Ram:* Are there many absentee landlords in this Province?—Yes.

31158. Do they let their land to tenants on cash rent or *batai*?—The tenants hold their lands at rents which are fixed in cash at the time of the settlement, and which cannot be altered during the term of the settlement.

31159. At the time of the settlement you fix the rents the tenants are to pay?—Yes. The tenants' payments are fixed. What it really comes to is that the tenant is to some extent a proprietor with a limited right.

31160. *Sir Henry Lawrence:* Has he as good a right as a ryot in a ryotwari part of the Province?—No. There are three principal classes of cultivating tenure: the plot proprietor, of whom there are not very many, who has an absolutely transferable right, like the ryot in Berar; the absolute occupancy tenant, who has a limited transferable right, and can transfer on giving notice to his landlord and on payment to the landlord of a certain transfer fee, and the occupancy tenant who can lease his land only for a year at a time, and can transfer to anyone who would inherit his land if there were no nearer heirs, but who must otherwise get the permission of his landlord and pay the landlord a fee.

31161. *Sir Ganga Ram:* Have you any figures to show whether your Division produces its own food?—No.

31162. Have you to import food?—Except in time of famine I do not think we import any food except a little rice.

31163. But rice is the principal food?—We grow a very large quantity of wheat, and in my Division the principal food is wheat; rice is a supplementary food.

31164. Have you any figures as to that?—No.

31165. Could you provide us with figures, giving the population and the quantity of food produced?—They could be worked out, but it would mean a great deal of time and trouble.

31166. Do you often suffer from scarcity of fodder?—Not in my Division.

31167. When you do, what measures do you take?—Do you mean if there was a scarcity in the villages?

31168. Yes. Do you keep fodder reserves in any form?—No.

31169. There is no necessity for that?—I do not think so.

31170. Are any of your roads in the charge of the Public Works Department?—Yes.

31171. All the metalled roads?—No, the main roads, such as the Great Northern Road, which is the principal one in this Province.

31172. Are roads in this Province divided, as they are in the Punjab, into main, arterial and minor roads?—It is not laid down in so many words. We have transferred roads and provincial roads.

31173. Is there any law or principle according to which roads of a certain class are in the charge of the Public Works Department and of another class in the charge of the District Boards?—I do not think so. The general idea is that main lines of communication are kept up by the Public Works Department.

31174. What proportion of the revenue is given to the District Councils?—I think it is now 5 per cent, though I am not absolutely certain. It is either 5 or 6 per cent. It used to be 6¼ per cent, but I think it has now been reduced to 5 per cent.

31175. Do you levy any cess for roads?—This cess on the land revenue is the District Council's cess, and is given to the District Council chiefly for roads and education.

31176. Is no proportion fixed as to how they shall spend it?—Not now. There used to be.

31177. Has that been changed since the Reforms?—No, before the time of the Reforms. The District Councils now have absolute discretion in the use of their funds.

31178. Do you think *taccavi* reaches the cultivator without some of it being pilfered? Some witnesses have represented to us that if Rs. 500 is granted only Rs. 400 will reach the cultivator?—I think there is very little leakage in this Province. I have never come across a case.

31179. Is *taccavi* given for new wells?—Yes, to a certain extent I have known of cases.

31180. Are applications for *taccavi* decided speedily?—Very quickly, as a rule. When there is a great demand for loans, the Tahsildar takes the money on tour with him and hands it out in the villages.

31181. Are you in favour of peripatetic dispensaries, both for human beings and animals?—Yes.

31182. Is there that system here?—Not for veterinary work. We have a number of such dispensaries for human beings which, I think, are doing a certain amount of good; at any rate they are making more advanced methods of treating diseases better known. It is a question of time, but I think they are doing good.

31183. Is there any system here such as is in vogue in Madras, of giving subsidies to private practitioners to settle in rural areas?—We are just starting that; we only began this year. I have not yet come across instances of it.

31184. Have you in mind any extensions of irrigation schemes?—No.

31185. In your opinion, can irrigation be improved in any way?—I do not know very much about irrigation, but I think in my Division it would be too expensive for public money to be spent on it, though I have not yet got figures to prove that. I refer to irrigation on a big scale; small irrigation works may be made to pay.

31186. It has been represented to us that sometimes crops fail simply for want of one watering. Does that happen in your Division?—It might conceivably do so; I could not say off-hand.

31187. In those cases, of course, irrigation would pay?—It would pay, perhaps, for one year out of twenty. One usually reckons that once in ten years a crop will go wrong.

31188. The irrigation people say it happens more often than that?—I refer to a bad failure.

31189. You refer to rope making: is that done as a trade, or are the ropes simply made for use at home?—For home use, as far as I know.

31190. It is not a subsidiary occupation conducted for trade?—No; it is certainly not an occupation subsidiary to agriculture.

31191. They make rope for their own bullocks, and so on?—Not to any great extent. Probably the man who makes rope will sell a little, but it is not common for cultivators to make rope as a subsidiary occupation.

31192. Do the cultivators here have plenty of spare time?—Any quantity of it.

31193. During what period?—In the wheat-growing districts they put in their wheat in October, and after that they have very little to do until it is ripe. That means they have three or four months with little to do.

31194. They have nothing to do after putting in the seed?—We call wheat a lazy man's crop. It is different in the cotton country.

31195. Our people who grow wheat have not a minute's time to spare. They have got to look after fodder and other crops?—That is not the case here.

31196. *Sir Thomas Middleton:* Does the prosperity of the people vary a great deal from district to district in the Central Provinces?—Yes.

31197. Where that is the case, in many countries attempts are made to level up the quality of cultivation to that of the best district. What are the prospects of doing that in this Province?—There are climatic differences which affect the matter.

31198. I am going to ask you to analyse the difficulties. You have mentioned climate, and, I suppose, would add soil. These are natural conditions which limit the process. Apart from these, what other difficulties are there which could, perhaps, be overcome?—I am afraid I do not quite follow the question.

31199. I want you to think of this Province as a tract in which cultivation is relatively well advanced in certain areas and relatively very poor in others. If you set yourself the task of levelling up the quality of the cultivation to the best standard existing, what difficulties would you encounter?—The very first would be lack of money.

31200. You mean that in certain districts the cultivators are relatively well off, whereas in others they are not?—Yes, relatively; perhaps one might say that.

31201. But the lack of money depend upon something else. How is it that one group has money in their hands, while the other group has none?—The agricultural history of the tract.

31202. Is it largely a question of race?—It is to some extent; but that factor is going out. Ordinarily, the aboriginal is not a good cultivator, but in most places he has gradually been pushed off the good lands.

31203. Would there be much in that, for example, to account for the differences which one finds between Berar and Chhattisgarh; would race be an important factor here?—I think probably it would. It is rather hard to condemn a whole tract in that way. But there is no doubt that the Berar cultivator is a very enterprising fellow and the Chhattisgarhi is not. But I think there are probably climatic reasons for that.

31204. *Sir Henry Lawrence:* Are there reasons of public health?—Yes.

31205. Malaria?—Malaria, and there are a variety of other diseases too. The Chhattisgarhi is a bad physical specimen.

31206. *Sir Thomas Middleton:* You have indicated that health is one of the factors. What about the ordinary food of the people in the two areas?—The Chhattisgarhi's food is extremely meagre. I have little or practically no experience of Chhattisgarh. I have been there for a short time and that is about all. But the land is bad, the people are largely unhealthy and for that reason their physical standard is low and they have not got a high standard of living; they live largely on rice and nothing else.

31207. Is there anything in the educational position within the two areas that would account for the difference?—The Berari being more enterprising, he is more advanced as regards education. I cannot speak very well of Chhattisgarh.

31208 So far as your knowledge goes, it is mainly a question of climate, you think?—The climate is one large factor, there are others; I do not know if you include unhealthiness in climate.

31209. You mentioned the condition of the people. Are there any differences in the marketing conditions in the two areas or in any other two areas that would suffice to constitute a great difficulty in improvement?—I do not quite follow what you mean.

31210. What I mean is this. Suppose the markets in Berar are satisfactory; I want you to indicate whether there are any other areas which are held back in comparison with Berar by poor marketing facilities?—In general I should think that the proposition is correct. The Berar marketing conditions are better than anywhere else; there is no doubt about that. I should think you would have to improve the marketing conditions in the Central Provinces, but I do not see how you can do it unless you improve the communications

31211. Now if you take the different districts in the Province, is there much difference in the constitution of village population?—By that, I mean, suppose in Berar you find about 60 per cent of the householders in a village are also land occupiers, in other districts would you be likely to find a very much larger proportion occupying land or not?—Again I do not quite follow you.

31212. What I want to get at is this. In a district like Berar, for example, we may find, in a particular village, 60 or 70 per cent of the villagers or heads or houses occupying land and the rest employed as labourers. Now do these conditions of land holding and labour vary widely throughout the Province or is it a general thing that you find about two-thirds of the population engaged as cultivators and one-third in labour?—I should think it varies extremely.

31213. From your knowledge of the Province, which are the areas in which the labourer is most abundant?—As compared to the cultivator?

31214. Yes; that is to say, where the cultivator hires his labour?—We get from the plateau districts a good deal of migratory labour which would indicate that the labour there was numerically stronger, that is, Seoni, Chhindwara and Betul districts especially.

31215. What I wanted to get at was whether although conditions may vary largely from village to village, there is any one compact tract where there is a good deal of landless labour and other tracts in which all the villagers are cultivators who do not employ hired labour?—No; I cannot say that either condition is marked characteristic of any tract.

31216. It varies from village to village; in some villages you have a low percentage of hired labour and in others a large percentage?—Yes.

31217. In the cotton districts you will find a larger proportion of hired labour?—Yes; we want more in the cotton districts.

31218. There must be more in Berar as compared with Chhattisgarh for example?—Yes.

31219. Is any part of your district a cattle-breeding tract?—No; there is no organised breeding.

31220. Is it a cattle supplying district?—Does it supply cattle to the other districts?—No; none in the Jubbulpore Division at all.

31221. They have to purchase from their neighbours?—A great deal of cattle come from the north. A certain number of people in Jubbulpore buy but they nearly all go down to the south.

31222. We were told that they come from the north; I thought it was from the Jubbulpore Division?—No; from still further north.

31223. You have no tracts in which cattle-breeding is an important industry?—No; there used to be. I think I said in reply to the Chairman that there was once such an industry in Mandla; but I think it is dying out to a great extent

31224. *Sir Henry Lawrence*: What is it due to?—The people who owned the cattle lived at a distance, and they could not control the herds, that is what I was told. A lot used to come down from Chhindwara to the forests of Mandla and Balaghat, and the owners of those herds told me they never could control the graziers who used to report the young stock as having died or been killed by tigers whereas they had actually been sold by them; eventually the thing did not pay and so they gave it up.

31225. It is not due to the forest restrictions?—No; I do not think so.

31226. *Sir Thomas Middleton*: What, in your opinion, is the first method by which you might hope to improve agriculture in the Central Provinces?—Put more money into the cultivator's pocket. If you gave him more money he could improve his system, improve his methods, improve his implements, improve his seed and so on.

31227. If more money is to go into his pocket, he should have more to sell?—You can do that by giving him better prices for his produce.

31228. Apart from prices which he cannot control, how is he to get more to sell?—That is one thing which we can improve. I thought you wanted to know what we could do to get him more money.

31229. You say you want to put more money into the cultivator's pocket. The cultivator himself cannot control the prices. You can only put more money into his pocket by increasing what he has got to sell?—We can help him a bit from outside.

31230. What do you think is the most obvious way? What about his cattle? I thought you could have put the condition of the cattle forward as being in importance first?—You mean that he could improve the condition of his cattle?

31231. Yes?—Yes, he could. The difficulty really about cattle over the greater portion of this Province is what I have said in my evidence, that the good cattle are ruined by the enormous number of useless cattle which eat up the food available in the village.

31232. That is one thing; but there are other things that ruin them besides. You pointed out, for example, that as a rule cows are not stall-fed at all. Even in Berar where they take much more care, we ascertained yesterday from villagers that they only feed grains to a cow if it is giving milk. How can one expect good cattle if cows are not properly fed?—I do not know; that is the whole difficulty, that the cattle are not fed properly.

31233. You also point out that in your own district there is any quantity of fodder available, but that nobody will pay for it?—Not only that; I do not think he will take the trouble of going and getting it.

31234. How are you going to remedy that state of affairs? That is what I want?—We have tried very hard; we have tried by giving them easy terms and we have not succeeded in making them do anything.

31235. Assuming that the cultivator were better educated, do you think that would help to solve the difficulty?—It might I suppose. If he used his brains a bit more, he might see the value of these things, but that would be a long business.

31236. *Mr. Wills*: As regards the question of subsidiary industries for cultivators is it not a fact that there is a tremendous prejudice in this Province against the keeping of fowls?—I believe there is amongst certain castes.

31237. Is it not a fact that in 1921 all the Gonds slaughtered their fowls?—Yes, under the influence of some of the local agitators, they were told to slaughter all their fowls.

31238. Does it not cast a social slur on them to keep fowls?—Yes, I think it does to a certain extent.

31239. And if they wish to raise themselves in the social scale, is it not necessary that they should give up keeping fowls?—Yes.

31240. *Sir Henry Lawrence*: Is that amongst the Gonds only?—No, amongst all the classes. It was due to a regular propaganda on the part of the local agitators.

31241. *Mr. Wills*: And keeping pigs is on the same footing?—Yes.

31242. And if a man were to take to basket-making, there would be a strong prejudice against him?—Yes.

31243. Then as regards the question of village roads. Is it a fact that there is an extraordinary difference between the north of the Province, the wheat growing tract and the rice and cotton growing tracts as regards the ordinary cart tracks?—I believe so. In the wheat-growing tracts, the village roads are practically impassable in the rains.

31244. Is it not a fact that there are hardly any cart tracks in the wheat-growing tracts?—Yes, it is not worth while having a cart track across heavy soil because you cannot use it in the rains.

31245. As regards the difference between Chhattisgarh and Berar, that is due, is it not, very largely to the historical difference between the two areas, that is to say, was not Berar a prosperous Province under the Moghul Emperors for many centuries, whereas Chhattisgarh has been a land-locked jungle tract?—Yes, that is perfectly true. Chhattisgarh was very jungly and very land-locked up to quite recent times.

31246. And the railway first entered Chhattisgarh about 1890 whereas Berar has had it since 1865 or 1867?—Yes.

31247. The *Raja of Parlakimedi*: For the required amount of agricultural knowledge, do you not think that the Revenue Inspector would be the best agency for popularising improved methods of cultivation among the ryots?—He has got too much to do in his own work. I should not like to have my Revenue Inspectors turning out as amateur teachers of agriculture.

31248. Do you not think that it would be a useful thing for the Revenue Inspector to gain some amount of popularity among the ryots by talking about the general condition of cultivation and how to improve it and so on?—It might be of use, but I cannot say that there is very much in that.

31249. During his probationary period, for instance, would you not like the Revenue Inspector to get a certain amount of agricultural training?—It would not do any harm, but I do not think that it would do very much good.

31250. But if you had a man with such agricultural experience, would you not like to have him as your Revenue Inspector?—If I had had two candidates for a revenue inspectorship, of whom one knew a lot about agriculture and the other practically nothing at all, I should certainly prefer the agricultural man. But I think that in the actual carrying out of his proper work with regard to land records the agricultural training would be of very little use to him.

31251. No, I was referring to the assistance which such a man would render in improving the general conditions of the ryots?—I am afraid I have never thought of using a Revenue Inspector for that sort of work.

31252. As regards the lack of roads in the Jubbulpore district, what is the chief obstacle?—Lack of money.

31253. Or is it because the Local Boards do not take enough interest in them? As a matter of fact they do not take sufficient interest, but that is not the reason at all. It is simply because of the lack of money.

31254. Can they not levy a special cess for roads?—They can levy a special extra cess on the land revenue in aid of their general funds and if they like they can earmark that for roads. But as far as I know that has never been done, although there is no reason why they should not do it.

31255. *Sir Henry Lawrence.*—Who would pay the cess?—The landlord, or malguzar: he can pass on a fixed proportion to the tenant, it is not quite half.

31256. *Mr Wills*: It is one-third?—Yes.

31257. *The Raja of Parlakimedi*: Cannot Local Boards apply for Government aid?—Yes, they can apply for it.

31258. Have they applied in that district?—They are always asking for more money. As a matter of fact, the object of every District Council is to get an extra slice of the provincial revenue.

31259. In that particular area there has been an application made?—Not by way of specific grants for the improvement of communications.

31260. In answer to Question 4, you say that you would like to see the research work treated as a central subject. Would you like to have it controlled just as the Reserved subjects are being controlled?—It does not matter very much as long as the financial side is safe. The trouble is that if you have an important piece of research work going on and you are starved in the way of funds, there is an end to it.

31261. Is the money reason your chief reason, then?—Yes.

31262. Under soils, you say that a certain type of grass is encroaching on cultivable areas and the Agricultural Department are trying to put it down. Are there any annual reports dealing with this?—Yes, the annual reports of the department contain an account of what is being done. As a matter of fact, they have not done a very great deal of mechanical ploughing; it is a new development.

31263. What was the area saved from the encroachment of *kans* grass last year?—I could not tell you; but it is very small, and they are just getting landlords to pay for it. The more enlightened landlords only will pay as it is an expensive job.

31264. What is the method adopted?—Ploughing by steam tackle.

31265. Is this grass confined to certain localities or has it spread all over?—It only affects the best soil, irrigation kills it to a certain extent. But I am not an agricultural expert.

31266. Are you satisfied with what is being done for improving the strain of the seed?—The department is doing what it can with the money at its disposal, and I must say that it is doing excellent work.

31267. How many depots for distribution have they?—The number varies immensely. I could not tell you off-hand as I have not got the figures with me There are different stages of development. Private individuals who will undertake to keep the seed pure are given seed in order to start private seed farms and where you cannot get suitable people for that the department has its own seed farms. The system varies in development from district to district. But where they have put out pure seed, it is undoubtedly to the interest of the cultivators.

31268. And is the cultivator easily able to secure his seed?—The ordinary tenant might find a little difficulty in getting it, there is not such a lot available. The small man, I think, would find it a bit difficult to get pure seed. At present, we are starting a system of giving loans of pure seed under the Agriculturists' Loans Act.

31269. What is the method he has to adopt for securing the seed? What is the way of applying for it?—He could apply now, in any district where the system of lending seed is in force, to the local Agricultural Assistant, or if there was a private seed farm he might buy his seed from this private seed farm.

31270. *Sir James MacKenna.*—What are your views as to the position of an Agricultural Assistant working in a district in relation to the Deputy Commissioner or the Sub-Divisional Officer?—Hitherto it has not been very well defined but I should like to see him to some extent an assistant to the Deputy Commissioner, recognised as such. The only trouble about that is that, for technical purposes, he must be under the department; the Deputy Commissioner cannot check his technical work.

31271. That is a very difficult problem?—It is a very difficult problem.

31272. Do the diaries of Deputy Directors go through the Deputy Commissioner?—I do not think they go through the Deputy Commissioner; I have not seen any in recent years.

31273. Have you any irrigation problems of importance in the Jubbulpore Division?—Not any that I am familiar with. The difficulty about irrigation, from what I have been able to see there since I have been in the Division, seems to me to be that it is very expensive.

31274. It is probably not worth the money?—I think it is not worth the money. It is worth it in certain cases, but in the great majority of cases it is not.

31275. You have not taken up any concrete instances yet in detail?—I went into the figures of one irrigation scheme, but there were a lot of diverse factors i it.

31276. *Prof. Gangulee:* In answer to Question 25, you make a reference to several economic surveys of typical villages, and say that the cultivating class is about to be ruined, and there is no profit in agriculture?—I do not say that.

31277. You say that from a perusal of these various economic surveys, that appears to be the conclusion?—I can think of three that I have read, in which that is the conclusion.

31278. From your own impression, what view have you been able to form with regard to this matter?—I do not think the cultivator is going to be ruined.

31279. Do you base your views on any particular enquiry that you yourself have made?—Yes. I have made considerable enquiries, as Settlement Officer, into the amount of sub-rent which can be got for land, and if the cultivator was going to be ruined, there could not be that amount of margin left.

31280. What is the value of cultivated land here per acre? Has the value increased?—Expressed in terms of money, it has of course increased. That is rather a misleading thing, because value in terms of produce is really the only way you can compare.

31281. Supposing a cultivator wanted to sell his land, what price would he get per acre of cotton or rice land?—I could not tell you

31282. What is your impression?—It varies from soil to soil so much. I can give you some figures from which you can make a rough calculation. The rent, I take it, might be put at 10 per cent of the gross produce, and a man will pay 100 times that. I have frequently seen that in good advanced tracts, I do not say it is so in backward tracts.

31283. Can you tell the Commission if there is any increased tendency for the consumption of intoxicating liquor and drugs?—I do not think there is any tendency to increased consumption. I should say it is rather the reverse, since we have put up the price.

31284. Of course your excise revenue has increased a great deal?—This year it has dropped heavily.

31285. I find that the total excise revenue for the financial year 1924-25 was estimated to be Rs. 150 lakhs, and there was an actual increase of Rs. 15 lakhs?—Yes, but we have had a blow this year, it is Rs. 25 lakhs less than last.

31286. In answer to our Question 6, you make the statement that a great number of the smaller cultivators in the country are never very far from the margin of subsistence. Do you observe any significant improvement in that direction; is there any change for the better?—I cannot say that I have observed any improvement. There will always be a certain proportion living on the margin of subsistence, especially in the poorer villages.

31287. On the question of agricultural education, you attach a great deal of importance to suitable teachers?—Yes. That is the crux of the whole situation.

3 288. You have in Jubbulpore a training college. Can you give the Commissi on your impression about it?—I do not know very much about it I think you had better ask educational authority about that.

31289. With regard to the question of settling agricultural graduates on land, would you approve of the suggestion to offer special concessions and grant unassigned culturable land to agricultural graduates?—It might be tried as an experiment.

31290. As a revenue officer, would you approve of that suggestion?—There is not very much land of any value in the Province to give to these people.

31291. There is land that could be reclaimed?—If they would take it up, it would be a very good thing to do.

31292. On the question of complete co-operation between the officials of the Agricultural and Revenue Departments, you are of opinion that revenue officers command considerable influence over the ryot?—Yes.

31293. How you bring about this co-operation that you would like to see?—I have stated that it is a very difficult question, but in course of time I think we shall probably be able to work out a system. The Deputy Commissioner, as some Deputy Commissioners do, may take the Agricultural Assistant round on tour. If the Sub-Divisional Officer and the Agricultural Assistant can both spare the time to tour together, a good deal could be done that way, but it is a difficult thing to do.

31294. I was not thinking of the Deputy Commissioners taking an interest in it. I was thinking of the actual revenue officers who come in contact with the culivators. I was thinking of the Tahsildars and Revenue Inspectors?—We all come into contact with the cultivators.

31295. But the Tahsildar comes into greater contact with the cultivators?—Yes.

31296. Do the Tahsildars or Revenue Inspectors take part in the Provincial Board of Agriculture?—Certainly not.

31297. Would you like to see a short course in agriculture for all these revenue officers of the lower grade, the Tahsildars and Revenue Inspectors?—I should like to see the Tahsildar have the benefit of the short course, but as I have already stated in answer to a similar question, I do not see very much gain to the Revenue Inspector. The Tahsildar might be put through a short course, and some good might be done in that way.

31298. By offering a short course to these men in the Nagpur Agricultural College?—We might do so. I think last year and the year before last we did give a short course of instruction to revenue officers, which did some good. I suppose it would do some good to give the Tahsildars some training in that way.

31299. In that case they would be able to co-operate with the demonstrators of the Agricultural Department?—I should like to say one thing about it, that in course of time, for these appointments, we shall be able to get graduates in agriculture of the University.

31300. Would you prefer agricultural graduates to ordinary arts graduates for these appointments?—Other things being equal, and provided the men possess good general mental attainments, I should prefer them.

31301. You have District Agricultural Associations, Tahsil Agricultural Associations and Circle Agricultural Associations. Could you tell the Commission how these various associations are functioning?—I have not really had very much experience of them of late years.

31302. Are the roads in this Province mostly under the control of the District Councils, or are they under provincial control?—It is rather hard to say. I do not know what the mileage really is I think one might say that the great majority of the roads are under local control now.

31303. Government has recently withdrawn about 160 miles of roads from the management of local bodies?—I do not know the exact mileage, but they have had to take back certain of the roads.

31304. Do you think that the retransfer of the roads to the Provincial Government has improved their conditions?—I have not seen the roads, but I should think it would, to judge by the other roads one sees.

31305. You say that the system of *taccavi* loans is inelastic. What suggestion have you to offer for making it elastic?—I do not think you can make it very elastic, for this reason that you are responsible for public money and you cannot risk it. Of course, we lose a certain amount, because remissions have to be given, but you must make the distribution of public money to some extent inelastic.

31306 You are not, it seems to me, in favour of the extensive use of *taccavi* whereas we had a written statement from the Deputy Director of Jubbulpore Circle in which he says that *taccavi* loans should be of great assistance to cultivators?—I think they are of great assistance to the cultivators. All that I meant was that you cannot push it too hard. We do give out quite a good deal of money now, and the Agricultural Department are helping by seeing that it is spent on proper objects.

31307. Would you like to see co-operative societies undertaking the work of giving *taccavi* loans?—Certainly not. I think it is not part of their function.

31308. In answer to the Raja of Parlakimedi, you stated that a certain amount of land in the Central Provinces is being reclaimed by mechanical ploughing. Is there a demand for such reclaimed land?—It is not a question of waste land being reclaimed; it is a question of land which is already occupied being reclaimed; it belongs to people already.

31309. My impression was that a considerable area went entirely out of cultivation?—There is a certain amount of land in certain parts of the Province which has not been cultivated for many years, but it is property belonging to somebody. The Agricultural Department do not plough it up for nothing; they charge the owner for it.

31310. You told us that the veterinary services are not quite popular?—I did not say that.

31311. You said that the local bodies do not take adequate interest?—That is a different thing.

31312. I find from the report that was submitted to us that the number of dispensaries is increasing, and the number of cases treated is also increasing?—I think it is so, as far as I know.

31313. But you say that the District Councils, under whom the veterinary dispensaries have been placed in this Province, are generally completely apathetic in their regard?—Yes, that is right enough.

31314. Then, how do you account for the increase in the number of cases treated? In 1901 there were 29,000 cases treated, and in 1922—25 there were 429,000 cases treated?—Yes, that is all right. The department is working hard, but that does not show that the District Councils are trying to help.

31315. But the cases generally come from areas within the jurisdiction of local bodies?—The cases do not come from the local bodies. They come from the local population, which is a different proposition.

31316. There has been the same increase in the number of castrations?—That is largely due to the introduction of improved means.

31317. Is it due to the introduction of the Italian method?—Yes.

31318. The people are appreciating the benefits of the veterinary services?—The people are getting, by degrees, to appreciate their work, but the local bodies do not try, as they could, to help the department; I am quite certain they do not. I have seen any number of veterinary dispensaries housed in a dirty little room in a *serai*, whereas the District Council could very well afford to give them better accommodation. The Veterinary Assistants do their best when they go out on tour.

31319. Do you think District Councils could be encouraged by propaganda to take more interest in the work?—I do not think propaganda will help much. It may help the work of the department in the villages It requires education to get the more educated classes to take an interest in it; they do not do so now.

31320. What is your view with regard to the introduction of legislation to protect cattle from outside infection?—As I have said, I do not know of very much that can be done in that direction. There is no doubt that herds of cattle coming into this Province do bring in disease. It has several times been suggested that something should be done to have these cattle examined on entry and to prevent the entry of infected cattle, but up to the present the practical difficulties in the way have made it impossible to do anything.

31321. Is there any draft Bill before the Council about this?—No, and I do not think there ever has been.

31322. You say you do not believe in the artificial introduction of subsidiary industries. Has Government made a survey of possible rural industries?—One was made many years ago by Mr. (now Sir) Ernest Low.

31323. What conclusion was arrived at?—I forget. It was a long time ago.

31324. You have an Advisory Board of Industries in this Province?—Yes.

31325. What is its function?—I do not think it is concerned with the starting of subsidiary industries; it has to do more with the development of existing industries. It controls the Boiler Department, factory inspection and so on.

31326. You are of opinion that the prejudices of the people are a serious handicap to the establishment of rural industries?—Yes.

31327. In the seventeenth and eighteenth centuries similar prejudices prevailed throughout Europe?—I dare say.

31328. Under the new Self-Government Act of 1920 each member is required to reside in his constituency, the idea being to keep the members more in touch with rural problems. What has been the effect of this provision ?—I have not so far observed that it has had any particular effect. I was speaking to a member of a Local Board the other day about the condition of the road that we were travelling along, which was quite close to his village I asked him why he did not take steps to see it was kept in proper order. He said he would like to, but no one else on the Board would listen to him, or let him have anything to do with it. I said that did not seem right, and he agreed it was not.

31329 You have formed the impression that the members do not take sufficient interest in rural matters? That is putting it a little too strongly It is a question of translating their interest into action They probably do take an interest, most people take an interest in their own affairs.

31330. *Mr. Calvert:* On the question of rural education, we are faced with two difficulties: leakage between the bottom and top classes in primary schools and the lapse into illiteracy after leaving school. What do you think is the real reason for the leakage between the first and fourth classes? I have spoken to people in the villages about that and I think it is almost entirely due to the lack of interest shown by the parents in the education of their children. There is also a certain amount of leakage due to the fact that the children are employed in odd jobs about the village.

31331. Do you think the latter reason is an economic one? Is it that they cannot afford to leave their boys at school,?—I think it is more due to custom. The amount of work done by these boys is comparatively small.

31332. Do you attribute that to the laziness or apathy of the parents?—Apathy. They do not care about education.

31333. It is not that they cannot afford to leave their boys at school?—Not in the majority of cases.

31334. In your note you say the teacher is almost always a half-educated Brahmin with no interest whatever and no knowledge of agriculture. Do you think that fact is responsible for the leakage? A more inspired teacher might keep the boys at school?—That is possible, but I do not think it has much effect

31335. A teacher more in sympathy with the rural classes might be able to bring pressure to bear on the parents? If a teacher had local influence he could get the parents to send their boys to school?—That is quite true. Formerly, the Tahsildars and local revenue officers used to do a good deal of school attendance work, but they have now been discouraged from doing it, because it is not their job, the schools being no longer under Government it was considered the local bodies should undertake it. Teachers have complained to me that they have to spend a lot of time in trying, usually unsucessfully, to get the boys to come to school.

31336. Have you in your Division any compulsory primary education?—Not yet.

31337. On the question of relapse into illiteracy, do you think the absence of any good modern vernacular literature is one of the causes of this?—Probably. All they have to read in the village is books like the Ramayana.

31338. That is not always available in modern vernacular, is it?—No.

31339. The idea of this education is to uplift the people and give them a wider outlook. Do you think the general squalor of the villages keep people from going in for education?—I cannot say.

31340. The fact there is a school in a village does not mean the village is cleaner and more sanitary and has a better water-supply and so on? The presence of a school does not react on the welfare of the village?—It is difficult to say.

31341. A charge commonly made is that education leads a boy away from manual labour. Do you provide water-carriers and sweepers in your schools?—I do not think we do in the primary schools.

31342. Do the boys get their own water?—I think so. I have never seen a water carrier in a primary school; there may be some.

31343. There was an effort made is this Province about twenty years ago to get rid of rural debt by some method of conciliation?—Yes.

31344. What was that?—I never had any experience of it, but no doubt the proceedings are available somewhere.

31345. It has been described to us as a failure?—My impression is that it was not a failure; it might have done more good, but it did do some good, at any rate in certain districts.

31346. Do you think the people will ever be able to get rid of this burden of debt from what they can save from cultivation alone?—I think they could, if they were more thrifty. As I have said in my note, there is a tendency for a man who gets a good crop to spend the extra money on some *tamasha* in his family. If they would only save that money they might get rid of their debts, or at any rate of a good deal of them.

31347. By steady thrift?—Yes, I am sure of it.

31348. You are averse from restricting the right to transfer holdings?—I am, in well-developed tracts, such as the Nagpur country.

31349. Do you think restrictions on alienation do in fact serve to withhold from the land finance which would otherwise be available?—Yes. There is one way in particular in which I have always held the system is bad for the land. The fine on transfers which I have mentioned amounts to a considerable sum in a great many villages, and that money does not go back into the land to any great extent. I think that is one of the chief evils of the present system. Although a certain number of tenants may be saved by these restrictions on transfer, the chief result is extra profit for the landlord which does not, in a great many cases, go back into the land.

31350. As far as I recollect, witnesses who have answered our question as to the causes of indebtedness have mentioned the purchase of land, but never land improvement?—I have not analysed the causes of indebtedness since I did settlement work many years ago, and I forget what the proportions were, but I think one of the causes was the spending of money on things like embankmets and so on.

31351. *Prof. Gangulee* Do you think increased prosperity is a cause of debt?—No.

31352. *Mr. Calvert:* On the question of the utilisation of cowdung as fuel, do you think one of the difficulties is that they have got used to one method of cooking and do not like to change the method of cooking?—I should think that might have a considerable effect.

31353 We have been told that the allotment of *taccavi* is very small in comparison with the sum required. Is there any difficulty here in getting the money required?—I do not know of any; at any rate it is rather hard to compare it with the demand.

31354. But you can meet the demand from your Deputy Commissioners?—Yes, I can; I have never been refused any allotments that I asked for.

31355. On the question of damage to crops by wild animals: Does the distribution of gun licenses prove at all effective?—It does in some places. The chief thing you want to destroy is the pig and the pig is not a very paying animal The man who gets the crop protection license may kill a few deer and sell the skins, leaving the pig alone; but that is not what you want We had a system by which we insisted on every man producing 4 boars' tusks every year as a condition of having his license renewed and I think that system worked quite well.

31356. *Sir Henry Lawrence*: Is it still in force?—Yes, in most of the districts.

31357. *Mr. Calvert*: Is the eastern half of your Division a rice eating tract?—A good deal of rice is grown in the Seoni district, but it is not a rice tract; my Division is not a rice tract.

31358. You are just on the edge of the rice tract according to the map?—Yes.

33359. Is there any difference between the physique of the rice eating population and that of the wheat eating population in that small area?—Not in that small area, because most of the people in my Division are not rice eaters; their principal food is wheat. There is a certain amount of rice too, but I think the principal food of the majority of the population is wheat.

31360. *Sir Henry Lawrence*: Are the wheat eaters distinctly more vigorous and more intellectual than the rice-eating population?—If you take the whole Chhattisgarh Division, which is mainly a rice eating tract, the physique is bad undoubtedly; but, for the ordinary district of the Central Provinces where the food is mixed, I should not like

to offer an opinion. But I should say definitely that as far as I know, taking Chhattisgarh, which is a rice-eating tract, the physique is very bad.

31361. You cannot say whether the *juari* eaters of Berar are less advanced in physique and intellect than the wheat eaters of your Division?—I should not say they are on the whole. There is very little difference one way or the other.

31362. *Mr. Calvert*: It has been suggested to me that we are beginning at the wrong end of the stick altogether. You have told Sir Thomas Middleton that putting it succinctly, the object of agricultural improvement was to give the cultivator more money; but it is suggested that he does not know how to spend even the money that he already has?—I am not quite sure that I follow what you mean.

31363. He wastes what he gets?—If you give him more money, in time you can get him to spend it properly; other things being equal, if he has more money he will spend it better.

31364. The evidence shows that there is a marked tendency in this Province for small cultivators to employ more labour on their fields?—I do not know.

31365. High prices simply mean less hours and through high profits of cultivation they employ labour and stop working themselves?—I think that probably may be true in the cotton tracts.

31366. Then the other suggestion put forward is that, however fast we may improve agriculture, the population will merely increase and wipe out the benefit?—You have got somehow to raise the standard of comfort and it is a very difficult problem; but it is a problem, I take it, which is not confined to this country.

31367. Do you think there is any hope at all of improving the lot of the villagers without first altering their outlook on the education of women?—A great deal can be done without it.

31368. You think you can push on agriculture and education and still leave the women in a degraded position?—You could do a lot more than you have done now in that direction, but I should think female education would help a great deal in the long run.

31369. In this Province are the Deputy Commissioners too overworked to take much interest in agriculture?—No, on the whole not.

31370. They have time to encourage the cultivator?—Yes, except perhaps in one or two districts.

31371. So that shortage of Government staff is not an obstacle to progress?—Shortage of what staff?

31372. Of staff to relieve the Deputy Commissioner of his routine duties?—I should say not, on the whole, the average Deputy Commissioner could do a good deal, I think.

31373. We have been told that the B.Sc's. in Agriculture do not like to put their hands to manual labour and a novel suggestion was put forward that in the Agricultural College we should dismiss all the menial staff and make the students themselves do the work. What do you think the effect of that would be?—It depends on what you expect them to do. I understand that the Principal of the Agricultural College for many years past has been insisting on every student handling the plough himself and I do not know if you can do very much more than that. If he is accustomed to plough with his own hands, there is no reason why he should not keep it up afterwards.

31374. Another suggestion has been made that Government itself stands in the way of agricultural improvement by not practising what it preaches, it will advocate wells of one type while it constructs wells of another type; inside the jail the wooden plough is used and outside the jails the agricultural student is asked to use iron plough?—I think it is a matter of money again. In jails your principal object is to provide hard labour.

31375. So that the people in the jail under Government control do not cultivate their jail garden regularly by the methods suggested by the Agricultural Department?—It may be so; I could not tell you.

31376. In order to rouse more interest in rural hygiene it has been suggested that the local dispensaries should be placed under the Public Health Department and not under the Inspector-General of Civil Hospitals ?—Do you mean the touring dispensaries?

31377. Under the present system the medical officers in charge of local dispensaries do not take much interest in hygiene and if they are put under the charge of the Public Health Department they will themselves take more interest in the hygiene of their surroundings ?—I suppose they might be pushed in that particular direction a little more But the Inspector-General of Civil Hospitals could equally well push them in that direction.

31378. But he is not responsible for rural hygiene ? —That is true; but after all he is a sanitary authority of a sort.

31379. Does your system here of having tenants' rents fixed at settlement in any way hinder a tenant from improving the scale of his farming ? As an enterprising man, can he still acquire more and more land ?—Yes ; but he acquires it with the rent fixed on it. The assessment is fixed on the land and it passes with it.

31380. *Sir Ganga Ram* Have you any crown lands in your Division, that is lands belonging to Government ?—We have a certain amount of land which has been excised from the Government forest which has almost all been distributed now.

31381. There is nothing to spare ?—Nothing worth while.

31382. Have you any spare land at all, never mind whether it is worth while or not ?—We probably have. I cannot give the exact number of acres available. It is almost all included in the areas demarcated as ryotwari villages.

31383. Would you like to encourage the B. Sc's. in Agriculture by giving them some Government land on favourable lease ?—Yes , I think it would be a good thing if we could give good land, but we have not got much good land.

31384. It need not be good land ?—They would not go in for bad land.

31385. But suppose they did ?—Then I should give them any encouragement I could.

31386 *Sir Henry Lawrence*. You spoke of the difficulty of raising the standard of comfort of the cultivator. Have you any suggestion to make how it can be done ?—I am afraid not, except that is a thing which might be done, I suppose, through some extension of the co-operative movement. That is the only suggestion I have; it is a very vague one and I have not thought much about it at all.

31387. I think you said that the cultivator made every effort he could to improve his cultivation ?—I think if he sees that anything is going to bring him extra money, he does it.

31388. You do not find villages of very poor cultivation side by side with villages of good cultivation ?—I think you do in some cases.

31389. *The Chairman :* On the same quality of land ?—Yes. Probably there are reasons for that; it may sometimes be due to a bad landlord.

31390. *Sir Henry Lawrence :* Is not the cultivator protected against the bad landlord ?—Yes ; but the landlord in some out-of-the-way place has ways of getting at his tenants and annoying them; he restricts their rights. Occasionally, I think that that might be one of the causes.

31391. Have you any reason to suggest that the cultivator is apathetic in the matter of standard of living, and to what do you trace it ?—I do not know, except perhaps the lack of education to some extent. His chief characteristic is patience and he is content with very little. He seems to be satisfied as a rule with a minimum of clothes and a minimum of food. If you are going to improve agriculture, my idea is to get him a little beyond that.

31392. How can you do that ?—I am afraid I have never found any method. In Berar and in the cotton country, it has come about by his actually getting more money. The standard of living is distinctly higher there and that has come about by the fact that he has more money to spend.

31393. And access by road to more developed areas may awaken his ambition ?—Yes.

31394. Then you come back to the question of road improvement?—Yes.

31395. *The Chairman*: What does the cultivator do with his cash when he sells his rice or cotton in the market on that very day?—I should think he probably takes most of it home

31396. Does he not very often buy jewellery afterwards from the goldsmith in the market?—I do not think he would, except from a surplus. I think that he would buy his jewellery at leisure and not immediately after he has sold his rice

31397. *Sir Henry Lawrence*: Have you seen the Raipur rice market where the cultivator goes straightaway and converts his cash into silver?—I have not seen it done.

31398. *The Chairman*: I want to know whether you think it would be a good thing to have a representative of the savings bank in the market, provided perhaps with a small office, who could be responsible for a certain amount of propaganda and advertisement and also for taking deposits then and there?—It might be tried, I think. It would be very difficult to draw the cultivator, considering that the more enlightened inhabitants of this Province are very chary of putting their money into banks. I think the cultivator would be very hard to move in that direction

31399. Meantime, is the post office doing anything at all to popularise savings?—I do not know.

31400. Have you yourself ever seen any propaganda carried out by the Postal Department?—No.

(The witness withdrew.)

MR. R. H. BECKETT, Officiating Director of Public Instruction, Central Provinces.

Replies to the Questionnaire.

QUESTION 2.—AGRICUTURAL EDUCATION. - Specialised agricultural education is under the direction of the Department of Agriculture. I propose therefore only to deal with this question in so far as it may be said to affect the instruction given in ordinary schools. As my remarks are of a general nature, I do not propose to make them in the form of answers to the specific questions asked.

The introduction of agriculture into the curriculum of ordinary schools is one aspect, of a general question. To what extent can vocational training be undertaken in schools designed to meet the educational needs of all pupils? That such training should be included is frequently advocated on the ground that the present system of education is too literary and calculated to limit the field of employment of those who have undergone it. In this connection, it is important to realise exactly what should be the purpose of an ordinary school The function of the ordinary school is to provide a liberal education suited to the age and mental capacity of the pupil which will afford him the highest opportunity for developing as a man and a citizen The curriculum should not be too literary, but should include subjects involving observation and manipulative skill so as to promote a general and not too specialised development. If a purely vocational subject can serve this general educational purpose, there is no objection to its inclusion. On the contrary, if the livelihood of a large majority of the pupils is likely to be connected with that subject, there is much theoretically to be said in its favour. But in practice the extent to which vocational subjects can be introduced into the curriculum of ordinary schools is strictly limited. Vocational training, to be of any real utilitarian value, must be given by experts in specialised courses of instruction which include a large amount of practical work and which cover a number of years, dependent on the type of training to be given. On the other hand, all forms of vocational training demand a certain standard of general education as a foundation on which the knowledge imparted by specialised courses of instruction can be built, the standard of general education required depending on the nature of the vocational course. The ordinary school curriculum has to cater for all classes of boys and certain subjects must be included as an essential groundwork for further education. Little time remains for what may be described as subjects of a vocational character, if the time-table is not to be overburdened.

Thus in primary schools the syllabus must include the 3 R's and a little simple geography. In addition to these, in this Province, gardening, handwork or drawing are taken as an optional subject where teachers are available who can teach them. Nothing more is possible. Here I should like to lay stress on the fact that by far the most pressing need of the Province, even from the point of view of those who wish to increase the agricultural efficiency of the people, is the removal of illiteracy and, where bare literacy has been attained, the improvement of the standard. Until this is done, any general advance, including advance in agriculture, is bound to be slow and handicapped. The removal of illiteracy must be the chief aim of the primary school and the effect of this removal, even on agriculture, will be incomparably greater than could be attained by attempting to teach agriculture in primary schools to an extent which would involve the partial exclusion of the essential subjects. Most of the schools have their little garden plots and, where the teachers are keen, something can be effected, but, speaking in general terms, the main aim must be to see that the pupil receives an education which removes illiteracy, which enables him to take an intelligent interest in his surroundings and in which the courses of study are suited, as far as possible, to the probable needs of the pupil in later life. The whole course of study for primary schools has been drawn up with these objects in view.

In rural middle schools, elementary science (nature study) is taken in addition to ordinary subjects. In these schools I think it possible that something more may be done by the provision of school plots of about one to one and a half acres, according to the size of the school, where conditions are favourable, and the introduction of a more definitely agricultural syllabus in place of the elementary science syllabus at present in force. The difficulty, however, will be to secure the services of suitable teachers. I should regard the instruction given in these classes as not being vocational in character, but rather pre-vocational, the main object being to interest pupils in

agricultural operations and thus implant in them the desire to return to the land and pave the way for future propaganda by the Agricultural Department. Indeed, such plots might be used by the Agricultural Department for demonstrating the benefits derived from improved qualities of seed, improved methods of manuring, etc. Experiments should, I think, be made in this direction.

With regard to high schools, these are situated in the towns, and I do not think that any agricultural education can or should be attempted. The conditions are not favourable and the majority of pupils have no intention of returning to agriculture. Moreover, a general science course is what is needed by those who wish to take up the study of scientific agriculture. I am most strongly opposed to text-book agriculture which is divorced from practical instruction. At one time a simple text-book in agriculture was studied as a subject for the Matriculation examination. It was merely taken as an easy option and its value both from the educational and utilitarian points of view was *nil*. The course was very rightly abolished. These remarks apply to general agriculture. A course has recently been drawn up by the Board of High School Education in agricultural botany, but up to the present time no school has attempted to introduce this subject.

QUESTION 23.—GENERAL EDUCATION.—(*a*) (*i*) It is a difficult matter to trace the bearing of general education upon the agricultural efficiency of the people. It is my opinion, however, that it has, at the present time, and is destined in the future to have, a more far reaching effect than is commonly supposed. High school or collegiate education is said to have the effect of making those who have received it out of sympathy with rural life. That there is a large element of truth in this cannot be denied, but it is, I think, only partially true, and perhaps not more true in India than in other countries. When the son of poor parents succeeds in obtaining a high school or collegiate education, he naturally finds that the village offers no opportunities for employment. This he has to seek in the larger towns where there is greater demand for his services in whatever profession he takes up. He also finds village life dull and uninteresting in comparison with life in the larger towns. When the sons of a landlord are educated, some of them take up other professions, but some return to the land and it cannot be doubted that the general education which they have received has the effect of widening their outlook, it enables them to take a more intelligent interest in agriculture, and renders them more capable managers of their farms or estates. I have met landlords who take a keen interest in the experiments or demonstrations carried out by the Agricultural Department and the fact that they have received a general education enables them to keep abreast of the times and renders them more efficient agriculturists.

(*ii*) and (*iii*) It is still more difficult to trace the influence of middle and primary schools on agricultural efficiency. But in a general way it may be said that the education which they give renders the pupils more intelligent and paves the way for propaganda work by the Agricultural Department.

(*b*) (*i*) Most rural schools have garden plots attached to them but these are frequently too small and, as already stated, I think that something more may be done by the extensive introduction of school plots of from 1—1½ acres in extent in rural middle schools. It is easy enough to put down a paper scheme but difficult to devise one which really attains the object aimed at. Much will depend on the ability and enthusiasm of the teacher and on the feeling in the village. This matter is engaging the attention of the Education Department and in this connection I attach a note drawn up by Mr D'Silva, one of the Inspectors of Schools to whom it was referred for opinion. The primary school course of four years under existing conditions can scarcely establish literacy and the absence of suitable and interesting reading matter in villages tends towards a rapid lapse from even the low standard of literacy acquired. Libraries in villages run in connection with the village schools have so far not caught on in the Central Provinces. In fact, it is the apathy of the people towards improvement and culture which forms the chief stumbling block to progress. A live organisation doing propaganda work illustrated by popular lectures, lantern slides, cinema shows, might do much. It would, however, be expensive.

(*ii*) Compulsory education in rural areas is still in the experimental stage in this Province. Up to date it has been introduced altogether in 65 villages. In some cases, as far as can be judged at this early stage, the results are distinctly promising and the anticipated increase in the number of pupils attending schools has been fully realised. In others the term "compulsion" is almost misleading, the attendance authorities having found it difficult to enforce attendance against the wishes of the

parents. On the whole, I think that it is a fair statement of the case to say that as far present experience goes, the results are encouraging.

(*iii*) The explanation of the small proportion of boys in rural primary schools who pass the fourth class is that the children's parents do not yet appreciate the value of the education received and take their boys away from school as soon as they are able to add to the family income by earning a few annas a day in the field. Generally speaking, it may be said that in agricultural areas the regularity of attendance of children at schools is governed by whether or not they are wanted for work in the fields.

Extract from a Note by Mr. D'Silva, Offg. Inspector of Schools.

Suggestions for introducing Agriculture in Vernacular Middle Schools.

1. *Aim of the Course.*—The aim of the course should be definitely to:—

   (*a*) Impart a certain amount of practical information in agriculture useful for even the smallest landowner.

   (*b*) Help in stimulating a new interest in the land and a new outlook on agricultural enterprise.

   (*c*) Develop, to the extent possible, powers of observation and deduction and create habits of experimenting and perseverance.

This is by no means an ambitious aim It is practically the same as that of the present science course in middle schools. It includes both the cultural and useful aspects of the subject.

It will supply a long felt want and remove completely from the curriculum of our vernacular middle schools that long standing stigma of having courses which do not take into consideration rural life and its requirements. It will secure for our system of education more popularity and win more confidence in our methods and aims.

This suggestion implies that the course must not only be definite but that the aim should be more pointed without being too ambitious.

Boys, teachers and parents are more likely to fall in with a more definite and practical aim than with the idea of indulging in a mere "species of recreation".

2. *Means of attaining the aim.*—(1) The course should receive a definite place in the curriculum prescribed for vernacular middle schools. It may be placed either (*a*) as an alternative to science, or (*b*) be substituted for the present course in science or (*c*) the science course may be so modified as to include the course in agriculture and be called "science and agriculture".

Alternative (*b*) is in my opinion most suitable for vernacular middle schools. The scanty provision hitherto made by local bodies for supplying the prescribed apparatus for teaching science, the poor knowledge of vernacular school teachers and the general environment and conditions that prevail in vernacular middle schools render the teaching of science so ineffective as to be of very little value to the pupils. Agriculture will make a better and more popular substitute and one which the local bodies will be more ready to finance liberally.

(ii) The teacher for this subject should be a regular member of the staff. He may or may not be qualified to teach other subjects, but it is essential that he be a whole time man on the staff, capable of influencing boys. This will gain for him respect from the boys, attention from the management, sympathy from the other members of the staff including encouragement and co-operation from the head master.

There are in almost every District Council service and perhaps in some Municipal services also, teachers trained in agriculture. Some of the younger men of this class could be sent for a special retraining in the subject. District Councils would, I think, readily participate in any scheme of training devised by the Agricultural Department, and would very likely be even prepared to help financially in such training by granting salaries or stipends for the period of training.

MR. R. H. BECKETT.

Some of the "third year" trained men could also be selected for a course in agriculture. The supply of teachers will, in my opinion, offer very little difficulty.

If a *kamdar* is considered to be more suitable for the purpose, I would suggest that *kamdars* be specially selected for the purpose and attached to the staff of the school.

In my opinion, the services of a *kamdar* will hardly do if the subject is to be even treated a little more seriously without making it definitely vocational.

If teachers are considered unsuitable, the Agricultural Department may be asked to select suitable men for the post.

The essential qualifications that I would lay down are ability to teach the subject as well as ability to influence boys. The essential condition would be regular membership of the staff.

(iii) Land for carrying out the practical work should be acquired by Government for the purpose and lent to the local body, rent and tax free, solely for the purpose of such work and it should be definitely stated that the rights of the local body cease to exist if the land is not regularly used for the special purpose for which it is given.

The acquisition of land may be sometimes an expensive undertaking but there will also be instances where land may be given as a gift or part-time gift by some malguzar on the same conditions that Government would give to the local body. Such instances would, I think, keep the total expenditure on acquisition within manageable proportions.

If acquisition is too expensive an undertaking, Government might help in the acquisition and pay for the costs and other initial expenditure on the same basis as a special grant for building or furniture and apparatus, the local body paying its due share on the same basis.

The cost of upkeep and any other recurring expenditure would of course be borne by the local body and included in the expenditure for Government grant.

(iv) The time that was devoted to the subject at Chaurai was about one hour per day, *i.e.*, about five hours per week. This was considered essential for the course at Chaurai. The time at present devoted to the teaching of science is in most cases three to four hours per week.

The course now proposed is only a bit reduced in quantity compared to the course that was in force at Chaurai. If the subject is to replace or be an alternative to science, there should be no difficulty in the boys devoting four or five hours per week to the subject. This may be done by having two periods of two hours' duration and one period of the normal duration of 40 to 50 minutes for notes, recording of observations, questions from boys, etc.

3. *Conditions helpful for realising the aim.*—(i) Confidence of the parents in the practical value of the course They will see this value better in the school plot than the demonstration plot.

(ii) Interest and good-will of the boys. This will be secured more easily when connected with the school work rather than work under a *kamdar* at the demonstration plot.

(iii) Insisting on primary schools in the neighbourhood of vernacular middle schools carrying out the gardening programme laid down for them.

(iv) The produce should be given to the boys and parents should be invited frequently to see the school plot.

(v) Co-operation between the staff and agricultural teacher.

(vi) Regular supervision from the Agricultural Department and co-operation between the local body and the two departments concerned.

(vii) Last but not least—The courses should only be commenced after land has been acquired and teachers trained.

Mr. R. H. Beckett.

4. Centres where the scheme suggested may be tried, irrespective of the existence of demonstration plots and where the scheme is likely to succeed :—

(i) Hoshangabad district—All the eight vernacular middle schools would welcome the scheme and the District Councils are likely to be keen on it. The following centres will be well worth a trial :—

(*a*) Babai in the Hoshangabad tahsil.
(*b*) Sobhapur in the Sohagpur tahsil.
(*c*) Timarni in the Seoni-Malwa tahsil.
(*d*) Handia in the Harda tahsil.

(ii) Nimar district—

(*a*) Harsud in the Harsud tahsil.
(*b*) Shahpur in the Burhanpur tahsil.
(*c*) Bhamgarh in the Khandwa tahsil

(iii) Betul—

(*a*) Betul-Bazar in the Betul tahsil.
(*b*) Bhainsdehi in the Bhainsdehi tahsil.
(*c*) Multai in the Multai tahsil.

(iv) Narsinghpur district—

(*a*) Kareli in the Narsinghpur tahsil.
(*b*) Tendukheda in the Gadarwara tahsil.

(v) Saugor district—

(*a*) Rehli in the Rehli tahsil.
(*b*) Banda in the Banda tahsil.
(*c*) Gadakota in the Rehli tahsil.

(vi) Damoh district—

(*a*) Hindoria in the Damoh tahsil.
(*b*) Patharia in the Damoh tahsil.
(*c*) Hatta in the Hatta tahsil.

(vii) Chhindwara district—

(*a*) Amarwara in the Amarwara tahsil.
(*b*) Chaurai in the Chhindwara tahsil.
(*c*) Mokhair in the Sausar tahsil.

Oral Evidence.

31401. *The Chairman* : Mr Beckett, you are officiating Director of Public Instruction in the Central Provinces ?—Yes.

31402. We have your notes of evidence. Do you wish to add anything at this stage to your written note ?—No

31403. Have you any views on adult education that you would like to put before the Commission ?—It depends on what you mean by adult education.

31404. I am thinking primarily of adult education designed to equip adults with literacy ?—In regard to adult education in this Province I think that the education of adults is of comparitively minor importance as compared with the education of the child. There is very little demand for adult education and the experiments which have been made in regard to it show that the expenditure incurred on it is to a very great extent wasted.

31405. What experiments are you referring to ?—Certain local bodies have opened schools for adults and the general experience has been that after a short time the attendance falls, so that the class is scarcely worth continuing. The year before last an experiment was made in this direction by the Training College at Jubbulpore and a class of about 36 adults was got together and instructed by the Training College staff. At the end of two or three months this class of 36 had dwindled to three or four. A certain amount of success has been met with in connection with welfare work in the mills, but the success attained has really only been moderate. What I think it amounts to is this, that where an adult can see that he is going to gain some material benefit from education you may get that adult to attend a literacy course. But unless he can see some material advantage he will not attend throughout the course. He is too tired at the end of the day's

work to attend regularly. Generally speaking, the time which he has given to the course and the money expended on it are wasted. That is why I feel that the main line of attack against illiteracy must be through the child.

31406. Do you think that there is a lapsing into illiteracy on the part of the children who have, at one stage or another of their lives, attended school?—I am afraid that there must be a good deal of it; I have not got actual statistics with me. I have seen estimates given, but I do not know how these estimates have been arrived at.

31407. Have you yourself formed any view in the matter?—I think that undoubtedly, especially in rural areas, there must be considerable lapsing into illiteracy.

31408. Do you think that is due in part to the fact that the majority of the children return to parents who are entirely illiterate?—It must be largely due to that.

31409. In that connection, do you associate the need for adult education with the problem of achieving literacy amongst children?—The trouble is that I do not think it can be managed, for the simple reason that you cannot get adults to attend schools. I think that wherever there is a demand for adult education, it should be encouraged and met and that if possible the demand should be created. I think, however, that adult education should always be a side line, as compared with the main line of attack which after all is the line which has succeeded in all other countries.

31410. Have you any views as to the possibility of developing female education in this Province?—We have formed a committee at present to go into the whole question of girls' education. The difficulties in the way of advance are great. Secondary female education is progressing because the intelligentsia are recognising more and more the desirability of educating the feminine half of the population. But as regards female primary education progress has been extremely slow. There are various reasons for this: the apathy of parents is perhaps the chief reason.

31411. Is your department carrying out any propaganda in favour of education?—This committee which we have formed may be regarded as doing propaganda work. It will consult public opinion. In addition, the officers of the department are always impressing upon the people, whenever possible, the necessity for girls' education.

31412. Are you using other departments to help you? How about the Co-operative Department? Have you attempted to use that department?—I do not think that we have made great use of the Co-operative Department.

31413. Do you think you might do so?—Yes.

31414. Co-operation itself is primarily an educative movement, is it not?—Yes.

31415. You describe the system in vogue in primary schools. Do you attach much value to the nature study being taught at the present moment in your primary schools?—I attach some value. In practice we find that it is extremely difficult to get satisfactory nature study teachers.

31416. Is that because you draw your teachers from the wrong class? Or because you do not pay them enough? Or because you do not instruct them enough in the methods of teaching nature study?—I do not think any of these causes hold good. Our rural school teachers are villagers; they are trained to teach in our normal schools which are quite good normal schools and the pay is not unsatisfactory. The minimum salaries prescribed by Government are: for our untrained teachers, Rs. 15; trained teachers Rs. 20. In dear districts the untrained teachers get Rs. 18 and the trained teachers Rs. 23. In many districts the pay of the head master goes up to Rs. 50, Rs. 55, Rs. 60.

31417. What proportion of the teachers are trained and what proportion are untrained?—I could not give you the exact figures: the greater number of them are trained.

31418. *Sir Ganga Ram*: And the greater number of them are graduates?—I am talking of primary school teachers who are not graduates.

31419. *Prof. Gangulee*: How many normal schools have you?—We have 11 normal schools and they are capable of turning out more masters than we at present can find employment for. In fact we had to reduce one or two sections because the market was getting unduly congested. This was due to the fact that local bodies

in certain cases confirmed untrained teachers, but we have pressed on them the undesirability of confirming more untrained teachers. Our normal schools meet the demand for the supply of trained teachers and we can turn out more teachers than we can find employment for at the present moment.

31420. *The Chairman* : I think the only middle school with a vocational course in agriculture is on the budget of the Agriculture Department ?—Yes, the Powerkhera School at Hoshangabad.

31421. Are you familiar with the working of that school ?—Only on paper.

31422. Are you, as a department, contemplating any experiment of that sort, or is it your intention to leave the future development of that in the hands of the Agricultural Department ?—Not the agricultural training given in ordinary schools, which I regard as prevocational training. As I have stated in my note, I think that vocational training, if it is to be of any use, must be given in specialised institutions where students are taught by specialists, and the course must cover a number of years But we are contemplating introducing agriculture into our rural middle schools. I enclosed a note* which was sent in by one of the Inspectors of Schools, which is generally on sound lines, and I think it is perhaps likely that we shall experiment in that direction in the near future.

31423. When do you expect this experiment to be made ?—I think that the department will be taking it up shortly, on the lines set forth in my note. We shall have to acquire land.

31424. Meantime, you have nothing of that sort in operation ?—No.

31425.—Have you any views about compulsion in primary education ? Do you think that is a principle that should be applicable in this Province ?—I am strongly of opinion that it is through compulsion and through compulsion alone that we shall be able to combat illiteracy. Compulsory schemes have been introduced, as I have stated in my note, in 65 villages. It has also been introduced in certain Municipalities, and it seems to be spreading For example, I passed a scheme for compulsory education in Raipur a few days ago, and a scheme for its introduction in 21 villages in Bilaspur is under consideration; a scheme for the Balaghat Municipality is ready for sanction. I mention these as instances which show that it does seem to be taking hold.

31426. What is the longest period for which compulsion has been enforced for any particular district ?—I think three years.

31427. Do you expect the principle of compulsion to diminish, by an important extent, the leakage between the bottom and the top of the primary system ?—I do ; I think it is the one way of diminishing that leakage which is likely to be absolutely effective.

31428. Do you expect a complete stopping of that leakage by means of compulsion? Or do you still expect to lose a proportion ?—I think in the beginning a proportion may be lost, because in certain cases local bodies may be rather reluctant to enforce the rules, but I think that things will be tightened up in course of time, and I do not see why the whole leakage should not be stopped altogether.

31429 What penalty is visited on parents who disobey the laws and the rules ?—At present a fine is inflicted.

31430. Who benefits by that fine ?—Presumably the local authority, but I have forgotten.

31431. Have you any indication as to the number of fines that have been levied ?—No, I have no information.

31432. Do you think that local authorities are taking action of a disciplinary nature ?—They vary. In some cases, the numbers who have attended have gone up satisfactorily, and it would seem, if the first estimates were correct, that practically every boy has been brought in to the school, but it is too early yet to say whether there has been leakage during the operation of the course.

31433. Do you form the view that there is an increasing demand for education for their children amongst the cultivating classes ?—There is certainly an increasing demand in some districts. In other districts, I am afraid that the parents are to a large extent apathetic. I think there is certainly an increasing demand in the urban areas.

Vide pages 370—372.

31434. Where such a demand exists in a purely rural area, have you been able to associate that demand with any other circumstance or condition ?—I should think, speaking broadly, that one might associate it with the general welfare of the people.

31435. You mean general prosperity ?—Yes.

31436. The well-to-do are the first to ask for it ?—Yes.

31437. Meantime, the Commission has been told that primary education is entirely free; is that so ?—Compulsory primary education is entirely free.

31438. What about optional primary education ?—For optional primary education, I think a very small fee of one anna or somethihg like that is levied.

31439. One anna a month ?—Yes.

31440. Is that the general position throughout the Province ?—Yes, I think that is the case.

31441. How about books ? Does that include books ?—Most District Councils give grants to poor boys; otherwise, the pupil supplies his own books.

31442. So that, except where the boy is regarded as a poor boy, the expenses to the parents amount to one anna a month *plus* the expenditure for books ?—Yes; it is one anna a month *plus* the expenditure for books, which is quite small.

31443. Are you the permanent Head of the department ?—I am the officiating Head.

31444. Your Chief being away ?—Yes; he is on special duty with the Government of India.

31445. How long have you been in charge ?—It is now about three months, and I have officiated before for about 14 months.

31446. Is the appointment which has taken your Chief away from the Province likely to be one of long duration ?—It is a temporary appointment.

31447. *The Raja of Parlakimedi*: During your experience in the department, did you find the tendency to learn growing in the rural tracts ?—As I have just stated, I think it is growing in the more prosperous tracts, but in the less prosperous tracts the parents are, to a large extent, apathetic, and they have to be persuaded to send their children to school in many cases.

31448. What is the class which usually takes advantage of the schools ? Are there any particular classes which do so ?—The more well-to-do classes do so. Of course, certain castes take to education much more readily than others.

31449 How are the primary and middle schools financed ? Are they financed by Local Boards, or do they get any grants from Government ?—Vernacular primary and vernacular middle schools are financed both by local bodies and by Government funds.

31450. Are those schools growing in number ?—Yes.

31451. When giving Government grants to such schools, what are the factors you take into consideration ?—We have different systems. In our grants to Municipalities for vernacular education we have a certain formula according to which the grant given by Government is based on the expenditure of the Municipality on education. We take the expenditure on vernacular education, deduct from it 6¼ per cent of the Municipality's income, and give a minimum grant of half of the difference. In the case of local bodies, Government gives from time to time, when funds are available, large lump sum receiving grants which are devoted to various objects, say, for improving the pay of teachers or for instituting provident funds, or for expenditure on expansion as the necessities of the moment may require. In addition to that, we occasionally give a special non-recurring grant for the erection of school buildings. For example, last year we gave Rs. 9 lakhs to local bodies for the erection of primary school buildings. Of course, to these recurring grants from Government, local bodies add their own funds.

31452. As regards the construction of buildings, is it not the practice that local bodies should find half of the expenditure ?—We have no general rule. For instance, this grant of Rs. 9 lakhs was given without any conditions of that sort. In some cases local bodies who could afford to do so spent more than the money allotted; in other cases, they are spending what was allott-

31453. As regards the introduction of agricultural study in middle schools through the vernacular, are there sufficient books available on the subjects, so that it may be taken up at once?—I do not know whether there is a book which would suit the course which may be introduced. I do not think that that matters very much because there are plenty of books which can be used for the instruction of the teacher, and the teacher would work to a syllabus rather than to a text-book.

31454. How long would it take to get these schools to take up agriculture?—In the first instance, we should introduce it as an experimental measure in a few schools so as to find out the best line of attack. Then it would depend on the funds available.

31455. *Sir James MacKenna*: I understand that, in addition to being Director of Public Instruction, you are also Secretary to Government in the Education Department?—Yes.

31456. What are the advantages of that arrangement?—I think that the work goes through more smoothly and easily.

31457. You deal direct with the Minister?—Yes.

31458. And he issues his final orders as the orders of Government?—Yes.

31459. How long has that scheme been in force?—I could not say with certainty; I think about five or six years.

31460. It is of some standing?—Yes.

31461. Would you be able to express an opinion whether such an arrangement would work in the case of the Director of Agriculture?—I would rather not express an opinion on that.

31462. You are a science man yourself?—Yes.

31463. Are there any arrangements for the teaching of botany in the high schools?—No arrangements have yet been made for the teaching of botany. The High School Board has drawn up a syllabus in agricultural botany for the use of high schools, but so far no high school has applied for recognition in that subject.

31464. Students entering the Agricultural College would have to take a course in general botany before going in for economic botany?—Yes.

31465. What sciences do you teach in high schools?—Chemistry and physics.

31466. Up to a high standard?—Up to the usual Matriculation standard. It is a preparatory course.

31467. Would that standard be sufficient to enable them to superimpose a course in applied chemistry without further general chemistry?—No, they would need further training in general before taking up applied chemistry.

31468. *Prof. Gangulee*: Is it the definite policy of the Government to introduce free compulsory education?—Yes, by degrees.

31469. The policy has been outlined, and that is the intention?—Yes.

31470. There are 65 villages where compulsory education has already been introduced?—Yes.

31471. Is that by local bodies?—Yes, assisted by a Government grant.

31472. What is the extent of that grant?—Half of the additional expenditure both recurring and non-recurring) entailed.

31473. Is the curriculum for the compulsory primary schools the same as for the optional primary schools?—Yes.

31474. Is there any change in the quality of the teachers?—No. When we fix the grant for teachers' salaries, we usually take into consideration the cadre as a whole and fix scales of pay at rather liberal rates in order to provide a reasonable flow of promotion for the whole cadre.

31475. What were the rates of pay you mentioned in answer to the Chairman?—Those were minimum rates. The pay varies a little according to the district, from Rs. 20 to Rs. 23, for trained teachers, rising to Rs. 50 for the post of Head Master in most districts.

31476. What is the average attendance at these schools?—I cannot tell you off-hand.

31477. Are they one-teacher schools ?—No; we aim at getting fairly large schools, with 4 or more teachers.

31478. Who has the management of these compulsory schools ?—They are managed by the local bodies.

31479. Is there any supervision by your department ?—The department fixes the curricula and standards; the examinations are conducted by the department.

31480 Who does the inspection ?—It is carried out by the Deputy Inspectors who are usually Government servants; but as an experimental measure they have been transferred in 4 districts to the local bodies.

31481. Who pays them in that case ?—Their salaries are paid by Government as before.

31482. Is there any provident fund for primary school teachers ?—Yes, either a pension or a provident fund has been introduced, and practically all trained teachers are entitled to benefit. I referred a moment ago to certain lump sum grants made by Government. The object of one of those grants was to found pensions for teachers. Speaking from memory, I think Government gave the whole of the money for founding this pension scheme, which in some cases is now being converted into a provident fund scheme.

31483. In the compulsory schools are all the teachers trained ?—Most of them.

31484. Are they trained in normal schools ?—Yes.

31485. You have one Training College, I understand ?—Yes, but that is for the training of Anglo-vernacular schoolmasters. There is a Normal School attached to it.

31486. Who are the teachers in the Normal Schools ?—Most of them are graduates who have been trained in the Training College, some are under-graduates. There are certain upper and certain lower division posts. The Head Masters are specially selected men on Rs. 250—300 a month. In addition, certain Superintendents of Normal Schools are in the Provincial Education Service, and can rise to Rs. 800. On the whole, the schools are very well staffed.

31487. Do they get any agricultural training of any sort ?—The students get a general science training, which includes nature study, and for giving that training we have masters who have taken an agricultural degree in most cases, or at any rate taken a special course in agriculture.

31488. What about the pupils ? Do you take them to see Government farms in the neighbourhood ?—That depends on the situation of the Normal School. The one in Nagpur happens to be near a Government farm, and I think they make use of it; but there are others which are not near a farm and cannot. They have their own plots of land.

31489. There is a plot of land attached to the Normal School ?—Yes.

31490. Do they farm on it ?—They grow vegetables and so on in an experimental manner, and crops to some extent.

31491. The teachers are supposed to go to rural areas and teach there. I would like to know whether they are adequately trained in the problems of rural life or not ?—Most of the teachers in rural schools are villagers themselves; they go to the Normal School from the village. They have spent their lives in rural surroundings. Moreover, most of the Normal Schools are in semi-rural surroundings; the fields are close by.

31492. You have referred to the efforts you want to make in collaboration with the co-operative movement. Have you formed a definite plan of campaign in that connection ?—I think the system prevailing in the Punjab, where they have a Board consisting of the Directors of Public Instruction, Co-operative Credit, Public Health and Agriculture, might be useful in this Province for propaganda amongst adults, which is a form of adult education to which I attach considerable importance

31493 What are the composition and functions of your High School Education Board ?—The composition is varied. Certain members are chosen for their educational qualifications; these form the majority; 3 members represent the Legislative Council, 7 the University; there are 5—7 selected Head Masters, and there are also representatives of agriculture and engineering.

31494. What is the state of your vernacular middle schools? Is the number increasing?—Yes, particularly in Berar, probably because English has been added as an optional subject in a large number of the schools in Berar, and English is, of course, very popular.

31495. Are these schools controlled by the High School Education Board?—No; most vernacular schools are under the management of local bodies, but the Board, fixes the syllabus both for middle and high schools You asked me the powers of the High School Board. It controls the curriculum and examinations and has the power of recognition.

31496. You spoke of the failure of night schools. How do you account for the fact that when such schools are organised by missionaries or by the Young Men's Christian Association they are generally successful? Will you tell me where they have been successful?—In big towns a number of adults may be led to see that education will materially advance their interests, and that will make such schools a success; but the villager cannot see what he is going to gain, and is usually tired out at the end of the day's work.

31497. Even in rural areas, Missionary and Young Men's Christian Association night schools have generally succeeded, whereas efforts made by Government and other agencies have failed. That was the case in certain villages we visited near Coimbatore, for instance?—One cannot say why certain schools have succeeded and others failed without knowing the local conditions. It is quite possible the missionaries have at their disposal men who are prepared to take up the work in a missionary spirit, either on very low pay or with no pay at all, and who, by reason of their personality, are able to exert more influence than the ordinary village school master.

31498. It is perhaps a question of personality?—Very largely.

31499. Have you carried out a survey of areas where primary schools might be established?—Yes, a survey has been made, I think in 1923. It was carried out in connection with the introduction of primary education. The method of advance in the past has been to a large extent to work through local bodies and District Officers who have a good idea of where schools may be set up with advantage.

31500. Care is taken not to establish half a dozen schools in one area while leaving another area without any?—Local bodies know very well where schools are needed most. What you suggest may occasionally occur where there is a large number of communal schools, but that does not apply to any extent in the Central Provinces. It may happen that a village has an Urdu primary school as a separate institution, but we have not come to the stage that has been reached in some other parts of India where there are several communal schools in one town.

31501. Has any one been sent to the Punjab to study their method of introducing agricultural training in middle vernacular schools?—No.

31502 Nor to Moga?—Nor to Moga.

31503. What about the depressed classes? Are they still hostile to education?—I do not know that 'hostile' is the correct word to use. A certain number of the depressed classes are beginning to realise the necessity for education. But speaking of the bulk they are, I am afraid, apathetic. We do everything we can to encourage them We give special grants, but the results are disappointing. In the case of the depressed classes there is a deplorable falling off between the first and the top standard of the primary school.

31504. But the efforts made by the Labour Department in Madras, as you know, have proved very successful and these depressed classes themselves are putting up school houses?—I regard, as I said before, compulsory primary education as being the most effective means of educating the depressed classes. I do not think that anything will work as well, in practice, as compulsory education.

31505. *Mr. Calvert*: It has been given in evidence before us that compulsory education has not made any headway in this Province. Do you agree with that?—I think that the headway has been small up to the present, but it is now going on at an increased rate and I am becoming optimistic as to the rate of progress in the future, I think it is going to act as a sort of snowball.

31506. One witness says the main cause of the unsatisfactory figures is the apathy of the attendance committee?—That may possibly be true in some cases. I

think conditions vary from district to district but certain attendance committees are very keen on their work and they are seeing that the children attend school Of course it is too early yet to pronounce a final opinion.

31507. The system of compulsory education has not been in force long enough to have any influence on the attendance in the upper classes, say the fourth class ?—Not yet.

31508. That will be the real test ?—Yes.

31509. *Sir Henry Lawrence*: But the boys who are already in the fourth class are now compelled to attend, are they not ?—Yes; that is true

31510. *Mr. Calvert*: Leakage has taken place before that stage ?—Yes, I think you might possibly find the figures interesting.

31511. I should like to know what is the comparison between the first and fourth classes ?—I do not think that the comparison between the first and fourth class is at all a fair comparison because in the first class there are a considerable number of infants whom it would take two years to pass out of Class I. A fair comparison would be be ween Class II and Class IV. If you take the second and fourth classes in the Province as a whole the fall in numbers is from about 64,000 to 46,000 or a falling off of about 25 per cent.

31512. The fourth class is the literate stage ?—Yes

31513. You are reckoning to turn out about 46,000 literates per year ?—Yes.

31514. Have you ever tried to compare that with the normal death rate among literates in the Province to see if you are really making progress ?—I have made no such comparison. It must be remembered that those figures, I mean the figures between the second and the fourth classes are largely the result of the fall in numbers which takes place amongst the depressed classes and the more backward communities. If the higher castes are taken, the fall is from 45,000 to 35,000, that is 10,000 in 45,000; so that I think this fall in numbers is sometimes rather exaggerated. A mistaken idea arises from making a comparsion between the number in the first and the numb r in the fourth class.

31515. This same witness refers to the decision by the Local Government to invest the Director of Public Instruction with the power to supervise the expend ture of the money earmarked and spent on education. Had you no power before ?—In the case of local bodies, the management of schools under the recent Act is placed in their charge The grants given by Government have been given for specific purposes and if they are not spent on those purposes we have power to reduce the grants; for example if a grant has been given for pensions contribution and if pensions are not given, we have power to reduce the grant. But apart from that Government exercises very little control. Of course Government can always reduce the local body grants for good and sufficient reasons but it is rarely done.

31516. It has also been given in evidence before us that Indian boys are generally deficient in powers of observation as compared with English boys. Would you agree with that ?—I am not prepared to make a statement of that kind. I think to a large extent it would depend on the teaching which the boy had received. If properly taught, I think that the Indian boy is observant.

31517. The point is important when you are discussing whether your te chers should be from the village or from the actual cultivating class, because we assume that a member of the cultivating class may know something of agriculture, whereas a non-cultivator in a village may be ignorant of what is going on around him ?—A considerable number of our teachers are drawn from the cultivating class and in rural areas it is generally true to say that the teachers are villagers. Frequently, of course, they return to their own villages, which I consider to be very desirable.

31518. You mentioned to the Chairman that attempts to encourage adult education had not given very good results in this Province. Has any persistent propaganda been carried on in favour of adult education ?—No; I can hardly say that there has been any persistent propaganda, but if you have a parent who is not prepared to send his boy to school it is hardly to be expected that he will go to school himself at the end of the day's work unless he expects to get some material benefit from it.

31519. Then we have it on record also that there is work for only 100 days in the year, so that there is ample leisure. Do you think that you have got the right type of teacher for the adult schools ?—We have to make use of the teachers available.

I have no doubt that, if you could put down an enthusiastic graduate, he might by his personal influence obtain an attendance which the ordinary teacher might not be able to obtain ; but it is outside the region of practical politics to do that.

31520. Do you not think that a teacher for adult schools must have special qualities as compared with one for a school for children ?—I should think so.

31521. Did you get any special readers for adults ?—No.

32522. Do you not think that a reader which is suitable for infants is rather unsuitable for adults ?—No I think that it suits them in the early stages. It is designed on a progressive system.

31523. You do not think that an adult, after having painfully laboured through a few sentences, feels disappointed when all that he learns is that "the cow has four legs"?—It is difficult to make interesting books out of words of three letters. That must come later.

31524. Special readers have not been tried ?—No.

31525. *Prof. Gangulee*: You have told the Chairman that the education of the adult is of minor importance ?—Yes, comparatively speaking, as we can get much better results by educating children Funds are limited. If you have limited funds and spend too much money on the education of adults, it really amounts to taking away the educational bread from the mouths of the children. Adult education is expensive when measured in terms of literacy. We find for example in our Normal Schools that above the age of 25 years, adults are practically unteachable. For that reason they have been excluded from our Normal Schools. They were unfit mentally to profit by the instruction given.

31526. *Mr. Calvert*: You do not think that there is any connection between the teachability of the pupil and the teacher ?—I think that to a certain extent that connection does exist. But take, for example, the experiment which was made a couple of years ago by the Training College staff where the adult class had the benefit of good and experienced teachers. Nevertheless the pupils did not remain and numbers fell away to such an extent that the class was discontinued.

31527. We were given a little pamphlet by Mr. Mande. Was that experiment followed up at all inside the jail ?—No; I think, though, that a considerable extension of the experiment in jails is under consideration

51528. Does your department regard itself as in any way responsible for the moral uplift of the villagers ?—It is responsible for the education of the villagers and a part of that education consists in moral instruction.

31529. If you took a series of villages with a school and another series without a school, would you find any difference in sanitation, health and general conditions between the two?—I am afraid I am not prepared to express an opinion on that question.

31530. Is there any attempt here to teach your teachers the economics of village life, that is, land administration, a little agriculture, stock breeding, etc. ?—I do not think that they teach economics in that sense.

31531. You have not schools in which they go through a course in rural economics?—No.

31532. Do you think it would popularise education if they could be of more practical assistance to the villagers ?—I am doubtful whether it would have any effect.

31533. *Sir Henry Lawrence*: The last witness has told us that the teacher is almost always a half educated Brahmin with no interest whatever in, and no knowledge of, agriculture ? Do you agree with that statement ?—I do not agree with that statement at all. Our village schools, as I have said before, are staffed very largely by villagers who have gone through the vernacular middle school course ; this has been followed up by a two or three years' course in our Normal Schools which, I think I may say, are very efficient institutions. In the case of the teachers in secondary schools in the high schools department, they are all graduates who have taken a degree in teaching as a post graduate course, and in the case of the middle schools department they are

undergraduates who have gone through a two-years' course of instruction as teachers. I think that on the whole our teachers are very well trained.

31534. Conditions vary very much in different Provinces. In some Provinces they are largely Brahmins. Here it is not so?—Not in the case of primary school teachers.

31535. Can you give me any percentage at all?—I am afraid I cannot. I might be able to get the figures.

31536. Do you think it is about half and half?—I could not say. I shall try to find out and let you have the figures.

31537. What do you consider is the driving force behind this movement for compulsory education?—I suppose that the public feeling is that the general advancement of the Province is dependent on primary education.

31538. And are the people who ask for this compulsory education the people who would otherwise not have their children educated?—I do not know that the people who would not have their children educated are the people who ask for this education. I think really that the education is thrust upon them by the members of local bodies who realise that compulsory education is in the people's interests.

31539. And do I understand you to say that it has been introduced through Municipal Councils or through the District Councils?—Both. When I said 65 villages those were all under District Councils; in addition it has been introduced in a certain number of Municipalities.

31540. In how many districts are these 65 villages?—I think four districts.

31541. And some twenty districts have not taken any step in that direction?—No; but I think it is going to spread.

31542. If a parent does not send his boy to school, who decides whether he should be prosecuted or not?—An Attendance Authority is formed under the Act and the Attendance Authority is responsible.

31543. That body consists of members of the District Council, does it? What is the constitution of that authority?—I could not say without a reference to the notification.

31544. Is it official or non-official?—Non-official entirely.

31545. Up to date they have instituted no prosecutions?—There have been a few prosecutions; not many.

31546. Do you anticipate any difficulty, if prosecutions are started, that that would lead to any disapproval on the part of the people affected?—I think, possibly in the beginning, perhaps public opinion will have to be educated.

31547. *Sir Ganga Ram*: In the Punjab, in Lyallpur, we have started a Normal School for rural teachers, who go through one year's course in agriculture. Have you got anything of the kind here?—No, but when we have these larger school plots and introduce agriculture as a subject of study in the vernacular middle schools, we shall of course arrange for the training of the teachers by the Agricultural Department.

31548. Have you in your schools any plots allotted for agriculture, as demonstration plots?—We have school gardens, but we have no plots of larger size.

31549. What size are the plots which you have got?—The ordinary school plot varies in size.

31550. Can you give me an idea of the size of the school garden?—It may be the size of this room.

31551. What do they grow in that?—Flowers and sometimes vegetables?

31552. Vegetables for the schoolmaster?—Sometimes.

31553. There is nothing to teach the boys the mode of ploughing or harvesting, or something of that kind?—That is scarcely possible in these plots, but the school garden up to date has not been much of a success. I think it needs a little stiffening up.

31554. In this Province, have you any book giving agricultural mottoes in the vernacular language?—Not that I am aware of.

31555. Would you at least approve of selected agricultural mottoes being introduced in the curriculum of the rural schools?—Yes, it might be a useful thing to do.

31556. So that the boys can learn old men's experience?—Yes.

31557. In the Punjab we have got a book of mottoes which was edited by a Civil Service officer. Is there no recognised book of mottoes in this Province?—I am not aware of such a book.

31558. Do you teach scale drawing in the high school?—Yes, drawing is taken as a subject of study in the high school.

31559. Up to what standard is scale drawing taught?—Geometry, of course, is taught in the high schools up to Matriculation

31560. Could a student of a high school reduce a map to half its size?—I presume that is part of the drawing syllabus, but without reference I could not say whether that particular point is brought out

31561. Have you started teaching the boys the use of tools, for instance, those used in carpentry?—Yes, we have manual-training teachers attached to a number of high schools.

31562. Not in all of them?—Not in all so far, but that is coming.

31563. Do you find any difficulty about depressed class boys learning in the same schools with the higher caste boys?—We have had difficulty at times.

31564. But now they have merged? Do they sit together and learn together?—The department insists on their being treated alike in schools. Occasionally, parents object and there is trouble.

31565. What is the result of the trouble? Do you expel them?—No. In some cases, where local opinion has been very strong, they have separate schools.

31566. You have given way to that movement?—The department does not give way, and in all Government institutions we insist on all pupils being treated on the same footing.

31567. Have any boys gone to England with a Government of India scholarship for studying any industries?—Yes, we sent one Home last year, and we are sending another this year for electrical engineering.

31568 On a Government of India scholarship?—There used to be Government of India scholarships, but now they are awarded by the Local Government.

31569. You send one every year?—One has been sent every year, I think, for the last few years

31570. For three years?—About three years

31571. Do you think that in three years he will learn anything about electrical engineering?—I hope so.

31572 What is your experience of the men who have come back to India after their studies in England? Have they done any useful work, or have they taken to any industries?—I could not say from memory, but I think the results, on the whole, have been rather disappointing.

31573. Could you give us a list of those who have gone and any report about them?—Yes, such a list is submitted every year to the High Commissioner.

31574. Will you send us a copy of that?—Yes.

31575. I suppose you are a syndic of the University?—Yes, I am a member of the Executive Council, as we call it here.

31576. You mean the Syndicate?—The Executive Council is the governing body and it really takes the place of the old Syndicate.

31577. Generally, how many boys pass the entrance examination, and how many graduates pass in a year?—I am afraid I could not give the figures without a reference.

You may send the figures afterwards.

31578. Is the Province overcrowded with graduates of the University, or do the graduates find employment?—I think they get employment.

31579 Up to this time there is no overcrowding?—There is no great overcrowding, certainly.

31580. What is the scale of pay that a matriculate boy expects?—I think as a clerk he starts on Rs. 35, but I am not sure.

31581. And what start does a graduate get?—Supposing we take a graduate as a schoolmaster, he starts on Rs. 80.

31582. If he is not a schoolmaster, what does he get?—I think that would be a fair figure to take.

31583. When you talk of female education, can you give me any percentage of the literacy among the females?—I could not say what the percentage is, but it is very low

31584. Do you not work the figure out in your annual reports?—The percentage of literacy is in the census report.

31585. You do not report on it in your annual report?—We do not report on the literacy of the people as a whole

31586. Literacy among women is a very important matter which every Director of Public Instruction does report on in his annual reports If you want to expand female education, are you well equipped with teachers?—No. I am afraid the problem of the woman teacher is rather a serious problem. As a matter of fact, our cadre of teachers for Government schools, speaking from memory, is 730 or 740 in girls' primary schools I understand you are dealing with primary schools Out of this 730, in Government primary schools for girls, I think about 120 are men. They are usually pensioners, old schoolmasters. This number is being steadily reduced year by year, so that I think, in a few years, all our primary Government girls' schools will be staffed by women teachers. Similarly, aided primary girls' schools, which are usually run by Missionary Societies, are staffed by women teachers, I believe almost exclusively.

31587. Have you any Normal Schools for training these teachers?—We have two Government Normal Schools, and there are two aided Normal Schools for women teachers

31588. *Sir Thomas Middleton*: How many kinds of primary schools exist in the Province: Government, District Board, Missionary, private?—Schools are managed by local bodies, and in addition there are aided schools. There are only a very few Government primary schools, except girls' schools

31589 I heard you mention Government primary girls' schools, and I did not know whether you had any Government primary boys' schools?—There are only a very few Government primary boys' schools. Female education is regarded as rather a tender plant, and Government provincialises a school as soon as a certain minimum number attend, and pays the whole of the cost of upkeep.

31590 The boys' schools are the schools of the local authorities, aided schools and mission schools which are private. Is there any private venture school other than the missionary school?—There are a good many unaided, private venture schools.

31591. There is no private school aided by you, except those undertaken by some body like a missionary body?—There are a few other bodies. There are certain societies which have schools aided by Government, for instance, the Depressed Classes Society has schools; those are aided schools.

31592. Do you publish regulations for grants-in-aid?—Yes.

31593. And any school asking for a grant must satisfy you as to certain conditions. Yourself having been satisfied, how is the grant assessed? Do you pay a uniform percentage of the net cost, or do you vary your percentage, depending upon the efficiency and other conditions of the schools?—Generally speaking, we give a certain percentage of the expenditure, but in special cases, where there are special circumstances, we give them increased grants, but it is still a proportion of the expenditure. The normal rate of grant is one-third of the expenditure, but in special cases we give half; sometimes for depressed classes schools we give even two-thirds of the expenditure, because we think that they need encouragement.

31594. I understood from some of the previous answers that, in addition, you frequently make block grants for special purposes ?—Yes, to local bodies.

31595. Are the subjects of chemistry and physics commonly taken up by students appearing for the Matriculation examination in this Province ?—Yes, the majority of the pupils take them up.

31596. How is the equipment provided ? On what sort of scale do you give aid for the provision of equipment in schools ?—Of course, many of the schools are Government schools, in which case Government provides the whole of the equipment. In those that are not Government schools, we give furniture or equipment grants equal to half the expenditure

31597. You have not found it necessary to give an additional grant for apparatus for those schools which are providing instruction in chemistry and physics ?—We give grants for apparatus based on the expenditure.

31598. The normal grant, I think you said, was 50 per cent ?—Yes.

31599. You have not found it necessary to offer, say, 75 per cent in order to encourage such provision ?—No.

32600. We found in some Provinces very little was done in the teaching of these subjects owing to lack of apparatus. You refer to the fact that at one time agriculture was a subject for Matriculation, but it degenerated into text-book agriculture and was, in your opinion, valueless ?—It did not degenerate, it never was more than text-book agriculture.

31601. And was entirely valueless ?—I think so. The Principal of the Agricultural College said he preferred students who had not taken that subject at all, as then they did not have to unlearn what they had learnt.

31602. For how long did the experiment continue ?—I cannot say. It was going on when I came to the Province. At that time we were affiliated to the Allahabad University. I was largely instrumental in getting that course cut out.

31603 I ask you because in several Provinces where that experiment has not been tried it has been suggested by witnesses ?—I think it is a mistake to attempt it.

31604. Reference has been made to the statement, commonly heard, that Indian students are lacking in powers of observation. Do you know whether any competent educationist in this country has ever gone into that subject and made a report ?—I do not think so Personally, I have not found Indian students lacking in powers of observation. I had a great many of them through my hands as Principal of the Science College. They may sometimes lack those powers, but they can be developed.

31605. I had a good many students through my hands during six years in an Indian college, and my experience was the same. I found their powers of observation very good, if properly trained. But you are not aware of any discussion having arisen in educational circles on the subject ?—No.

31606. You refer to the fact that regularity of attendance is governed by whether the children are wanted for work in the fields or not Is any attempt made in this Province to arrange the school holidays so as to coincide with the busy season ?—Yes, that is almost always done in rural areas

31607. Does that necessitate a considerable difference in the periods during which holidays are taken throughout the Province ? For example, are holidays given in the cotton-picking season in primary schools in cotton areas ?—I cannot give you the exact dates, but school committees are allowed to make their holidays coincide with the busy seasons, and I know that they do so in many areas.

31608. Do you encourage them to take such action ?—They naturally take it

31609. *Prof. Gangulee*: Do you find the District Councils are keener on education than the Municipalities ?—It is impossible to generalise I hope the introduction of compulsory education in some Municipalities will encourage others to take it up, and that in course of time public opinion will become alive to its importance.

31610 Do you see any indication of that at present ?—I am optimistic of the ultimate result.

31611. **Do the reports of inspections of compulsory primary schools go to the local bodies as well as the Government?**—They go chiefly to the local bodies. Reports about every little primary school do not come to Government, but the schools as a whole are reported on each year by the Deputy Inspectors, the Assistant Inspectors and the Inspectors, and also by the local bodies themselves, in addition to which the district officials make a report We have a very complete system of reports.

31612. Government can follow their progress?—Yes.

31613. Do you find any improvement in the vernacular primers for these schools?—We have vernacular readers which were rewritten a short time ago under the direction of committees appointed for the purpose, and I think they are very suitable.

31614. Have you a Text-book Committee here?—Yes

31615 Do all the primers go before that committee for their decision?—Yes

31616. *Mr. Calvert* You say the high schools are situated in towns Does not the great bulk of your population live in villages?—Yes

31617. You make the majority go to the minority?—If you put a high school in a village, the boys would have to come from the other villages round about, the boys in the village where the school was situated would provide only a small nucleus The boys might just as well go to a town, where there is a larger nucleus.

31618. Does it not seem that towns have an amazing fascination for your department?—No, but towns are the centres to which all roads and railways lead, and we provide liberal hostel accommodation there for boys who come from the villages outside

31619. You do not attach much weight to the complaint that you drag boys away from the villages for education?—None, because no other course is possible.

(The witness withdrew)

Mr. AMANAT ALI, Burhanpur, Khandwa District.

Replies to the Questionnaire.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The agricultural class as a whole is dependent more or less upon village *sowcars* (moneylenders), and a great part of a cultivator's produce either in kind or cash goes to his moneylender. The result is that a few months after the harvest season is over, the poor cultivator is rendered penniless. Whatever surplus is left with him, if any, is spent in other wordly affairs, for example, marriage ceremonies, etc. The Indian cultivator keeps no provision for the future. He is regardless of it. Well then he must have sufficient money to meet his cultivation expenses throughout the year and finds no other source than to approach the *sowcar*

Another cause is that all the produce of the farmer goes to the merchant through the broker, who settles all bargains between them. The cultivator knows very little about the current prices in the market and the proper men whom he should approach in disposing of his produce. Thus everything is left to the sweet will of his broker who reaps the real profit which otherwise would have gone to the producer.

(ii) The village *sowcar* is the main source of credit for the cultivator.

(iii) The moneylender is the greatest enemy of the cultivator. His principal object is to get as much interest from the cultivator as possible An expert moneylender generally holds out hopes of lending money to him, but just at the time when money is needed most from him he tries to charge very high rate of interest or else does not stick to his word of honour.

Thus, in normal years, almost the whole profit of the cultivator goes to him as interest with the result that his principal remains fully unpaid, while in bad years the interest even is not satisfied. It is obvious, therefore, that if the cultivator once falls a prey he is never able to get out of the clutches of the *sowcar*.

(*b*) *Taccavi* loans should be granted more liberally at a low rate of interest and should be repayable not in a lump sum, generally speaking, but by means of instalments. The village *patwari* should see that the money so granted is not misused. I know many cases where cultivators obtained *taccavi* grants from the Government and paid it to the *sowcar*.

Yes, the Usurious Loans Act should be enforced and the Insolvency Acts may be made more applicable to farmers than to merchants.

QUESTION 10.—FERTILISERS.—(*a*) So far as dry farming is concerned, artificial fertilisers are of very little use. They are so costly that it is impracticable to apply them in dry farming practice. The increase in yield does not compensate the cost. I think that natural manures such as cowdung and city refuse can be more profitably used if properly preserved.

(*c*) Very little has been done to popularise the use of improved fertilisers. They are mostly used on the Government farms. Free experiments should be performed on private lands. At least one village in each *patwari* circle (where irrigated crops are raised) should be selected for such experiments, and the results shown to the cultivators.

(*f*) Scarcity of wood for fuel is the main cause of using cowdung as such. *Bona fide* agriculturists and labourers may be allowed to take fuel wood free from the Government forests.

QUESTION 11.—CROPS.—(*a*) (i) The Agricultural Department has no doubt done much towards the improvement of crops, but still a lot more remains to be done. Let us take, for example, the introduction of *roseum* cotton in the Central Provinces and Khandesh (Bombay Presidency). This cotton possesses higher ginning qualities and also gives a better yield The area under *roseum* has increased by leaps and bounds. But lately cotton wilt has spread very considerably. *Roseum* is being replaced by *buri* (an exotic variety) in places where the soil and climatic conditions are favourable (round about Manjrod tract in Burhanpur tahsil). But it does not thrive everywhere, and, moreover, is not liked by mill-owners as the staple is very weak. The department therefore should try to introduce some other variety of cotton which can resist wilt to a greater extent.

Let us now take another crop, say wheat, which is an important *rabi* crop in Melghat tahsil of Amraoti district and in Hoshangabad and Betul districts. It is almost grown as a dry crop. In years of heavy rainfall and in places where cold weather showers of rain generally fall, wheat rust plays havoc. Certain strains of wheat have been selected at Pusa such as Pusa 4 and Pusa 12 which resist rust to a great extent. But then they are not *barani* varieties and are only suitable for irrigated tracts. Another drawback is that these are beardless varieties and much damage is caused by wild animals. The department should pay more attention to wheat raised as a dry crop and try to find out rust-resisting variety. I would strongly recommend that a wheat farm should be established in Melghat tahsil of Amraoti district, which tract is altogether neglected by the Agricultural Department.

(ii) Lucerne and clover are the two important fodder crops which can supply green fodder almost throughout the year. They are generally grown on the Government farms and are altogether unknown to the cultivators. They can very well be introduced. Experiments may be performed on private farms under well irrigation, and methods of cultivation shown to the cultivators.

(iii) The demand for pure seed is so great that the Government seed farms can hardly meet the requirements of the farmers There are certain seed farmers connected with the department, as in Hoshangabad and Betul districts, who obtain pure seed from the Government farms and all their produce is distributed to other growers next year through the department. I like this system. My opinion is that such seed farms should be established in each tahsil or taluka and an association of well-to-do farmers and malguzars be formed through Government aid for this purpose. Seed depôts should be established at convenient places whence the pure seed would be available to farmers.

(iv) Wild animals generally inhabit neighbouring Government forests and great damage is done to crops in areas close to forest. Shooting is prohibited in the Government forest, except on permission for purposes of *shikar* and not as a measure for preventing damage. The Forest Department seems to have little or no sympathy with the agriculturists In my opinion, free shooting permits should be granted annually to *bond fide* agriculturists on condition that they should report the number of wild animals killed. So also, licences for keeping arms for crop protection may be granted more liberally. This is the first step towards prevention.

Trees and shrubs growing on the banks of streams and *nullahs* (running through the cultivated tracts) serve as good breeding places for wild animals. The ryot is not allowed to cut these trees (as in Melghat tahsil of Amraoti district). If this restriction is removed much damage can be prevented.

Similar crops are grown on scattered areas. If neighbouring cultivators, after consultation, grow similar crops in fields close to each other, more efficient watch can be kept and damage reduced.

Growing a few rows of such crops as are not liked by wild animals, along the border of fields is a much safer remedy.

QUESTION 15.—VETERINARY.—(*a*) This department should be under the control of the Agricultural Department.

(*c*) (i) and (ii): No. The agriculturists still stick to their old methods of treatment, for example, the practice of "hot iron touch", which is very common. Agriculturists are a most backward class. The majority of the people have little or no faith in the so-called foreign medicines. Even if native-drugs are used, they think them foreign. People, even for their own sake, seldom seek medical assistance, much less the assistance of the veterinary dispensary for their animals.

Indifference on the part of the Veterinary Assistants and their demands for fees discourage the cultivators still more. If better people are appointed, the standard of pay increased, and efficient supervision maintained, this evil can be remedied.

(*d*) Except those contagious diseases which are most common, such as rinderpest and foot-and-mouth disease, all other contagious diseases are unknown to the public, (for example, anthrax and piroplasmosis). Infected cattle are sometimes segregated whenever possible but other preventive measures are not known Assistants in the Revenue Department (*patwaris* and revenue inspectors) are the persons who usually come in touch with the cultivators. These men possess very ordinary educational qualifications. So that apart from the routine and prescribed departmental duties,

they cannot advise the cultivators in such matters when such a disease breaks out. If trained agriculturists are appointed as *patwaris* and revenue inspectors, these obstacles can be greatly removed. They are sufficiently trained for both these jobs.

QUESTION 26.—STATISTICS.—(*b*) In the Central Provinces and Berar, each tahsil or taluka is divided into so many *patwari's* circles and almost the whole work mentioned in sub-paragraph (*a*) of this question is entrusted to *patwaris*. These *patwaris* are men of very low qualification and, so far as agricultural knowledge is concerned, they are quite ignorant. They are not competent to judge the general prospects of the crop and the yield estimation. Their reports are not based on facts, and wrong figures and information are sent to the departmental heads In order to have men capable of doing such responsible duties, I would recommend that trained agriculturists may be appointed as *patwaris* or else these duties should be transferred to the Agricultural Assistants and the number of such Agricultural Assistants may be increased in each tahsil.

Oral Evidence

31620. *The Chairman* : Mr. Amanat Ali, you come from Burhanpur ?—Yes.

31621. What is your occupation ?—Farming.

31622. You have given us a note of the evidence you wish to place before us. Would you like to add to that by any statement at this stage ?—No.

31623. How many acres do you farm ?—About 800 acres in one place and 150 in another.

31624. You farm that yourself ?—Yes

31625. Have you any other land apart from those 950 acres ?—Yes, about 300 acres of barren land with no cultivation on it. I have started breaking it up with a tractor, I made a beginning last year and have already broken up 80 acres of it.

31626. Do you let any of your land out to tenants ?—Yes, I own some villages and let my land out to tenants.

31627. Is that included in the 950 acres you have mentioned ?—No.

31628. Do you farm the 800 acres you mentioned by means of an overseer and hired labour ?—Yes, I have some agents who look after the cultivation, but I manage the whole estate myself

31629. Do you carry on your farming operations with hired labour, or have you some arrangement with your labourers whereby they farm the land and share with you on some basis ?—It is all done by hired labour.

31630 You pay solely money wages ?—Yes, except in the case of servants who are paid partly in kind and partly in cash

31631 Have you any difficulty in getting sufficient labour ?—Yes

31632. For how many years have you been farming in this district ?—I have been in charge of my farm for the last 5 years

31633. Is the difficulty owing to shortage of labour increasing ?—Yes.

31634. How do you account for it ?—The neighbouring region is well-populated and many cultivators are migrating there because they are getting land from Government, whereas the land where I am is being depopulated, partly owing to forest trouble and partly on account of unfavourable climatic conditions.

31635 What are your principal crops ?—Cotton, wheat and gram.

31636. Are your lands irrigated ?—No.

31637. Do you do any irrigation yourself by means of wells ?—Yes, on a few acres of land, on which I raise vegetable crops and sugarcane, and I irrigate about 20 acres of wheat by well irrigation.

31638 How many wells have you ?—Two big wells.

31639. Have they paid you?—Yes.

31640 At what depth did you strike water?—30,to 40 feet.

31641. What lift do you use?—An oil-engine and centrifugal pump The wells are in different places, so that I have to use two separate plants.

31642. To the best of your knowledge, those wells have been a financia success?—Yes.

31643. Have you any tanks?—No.

31644. How did you equip yourself for this business of managing an estate?—This is my ancestral farm, and after getting my training at the Poona Agricultural College I took charge of it

31645. For five years you have been in sole charge of this large estate?—Yes.

31646 Speaking frankly, what have you to say as to the value of the training you received at Poona?—I find it useful in certain ways

31647. What do you think was the weakness of it, if there was a weakness?—I had not sufficient training in engineering.

31648. How about the commercial side? Were you trained in the science of marketing at all?—Not much.

31649. On the side of management?—We were trained on that side.

31650. Are you satisfied with the way in which you were trained in that direction?—Yes.

31651. How about the accountancy? Did you get any accountancy at all?—No, no accountancy.

31652. Do you know what I mean, farm accountancy?—Yes, we did not receive any training in accountancy.

31653. Would that have been an advantage?—It would have been. But I learnt my own accountancy after leaving the college.

31654. But did you learn accountancy from some one who had been familiar with the business of farm accounting?—Not exactly that; but I learnt general accountancy.

31655. But still, accounting on a farm is not at all an easy matter?—I did not find any difficulty.

31656. We should like to hear some of your experience in the matter of marketing crops. First about your own produce. how do you market that?—I take the whole of my produce of cotton to the market nearest to my village and I sell direct to the merchants or to the mills. We have mills in Burhanpur.

31657. How far is that from your estate?—50 miles.

31658. You take it by road?—Yes.

31659. Do you do it yourself in your own carts, or by contract?—I take it in my own carts.

31660. How long does that journey take?—About three days. I do not take my produce to the market in the first instance, I show my samples to the merchants or the mills.

31661. And you get better prices from the merchants or the mills?—Yes; I do not engage any middlemen or brokers.

31662. Whom do you charge with the duty of selling the cotton? Do you go yourself?—I go myself, mostly.

31663. And you of course keep in touch with the trend of the market?—Yes.

31664 And you hold out for a reasonable price?—Yes.

31665. Do you keep your cotton on your carts until you get the price that you think reasonable?—I have got godowns in Burhanpur and other places, and if I do not get a proper price I unload the carts.

31666. So you could afford to wait for the market?—Yes.

31667 Unfortunately, these are advantages not available for the small cultivator?—Yes.

31668. Can you express at all the difference between the average price that you get and the average price on the same day that the cultivator would get? What sort of difference do you put it at?—So far as cotton is concerned, I get at least Rs. 2 to Rs. 3 per *palla* more than what the average cultivator gets, a *palla* means 3 maunds.

31669 For the same quality of cotton?—Yes

31670. How about marketing your wheat?—I dispose of my wheat on the spot or send it to Burhanpur.

31671. You sell it retail to the local consumers?—Yes.

31672. Or else?—Or else I send it to Burhanpur and store it there till I get good prices.

31673 Do you have any difficulty in keeping it in good condition?—No.

31674. How about your gram?—I dispose of it in the same way.

31675. Mostly locally I suppose—Yes, most of my gram produce is given to my servants in kind.

31676. How about your sugarcane?—I grow very little of it.

31677. Is there a mill in the district?—No; sugarcane is only used for chewing purposes

31678. I was interested to know that you have been growing vegetables on irrigated land What about the market for vegetables?—I send them to the village bazars. We have different bazars in different villages on different days in the week.

31679 You send one of your servants to sell them?—Yes.

31680. Do you fix the price yourself?—No.

31681. He sells at the current market price in the bazar?—Yes.

31682 Is that a profitable venture?—It is.

31683. Do you think there is an opening for an expansion of that business?—Not in that place, because we do not have a good market, we cannot do the business on a greater scale.

31684. You mentioned this long journey that your bullocks do with the cotton. Do you take any particular steps to keep your bullocks in good condition in the season of fodder shortage?—I store a lot of fodder myself.

31685. What sort of fodder?—Wheat chaff. I have 200 to 300 acres under wheat and I store the chaff, and I also bring grass from the reserve forest and store it.

31686. You cut grass from the reserve forest and make it into hay?—Yes and keep it in stacks.

31687. Keep it under cover?—Not under cover, we simply thatch the stack.

31688. Have you considered, at all, the wisdom of adopting the scheme of preserving fodder known as ensilage?—Yes, if there is any shortage of fodder then we have to store it in the form of ensilage or hay.

31689. Do you make ensilage?—No, I do not.

31690. Do you believe in it?—Yes.

31691. Can you succeed in keeping your working bullocks in pretty good condition throughout the year?—So far as my bullocks are concerned, they are in good condition.

31692. One or two questions on the substance of your note On page 386, in answer to our question as to *taccavi* loans, you suggest that these loans should be granted more liberally at a low rate of interest. Do you think there is any danger that cheap credit might mean heavy borrowing amongst the cultivators?—I do not think so.

31693. What wheat are you growing?—I grow different varieties of wheat mostly the local *pissi* and the local *bansi*. I have improved varieties from the Government farm and some varieties from Pusa.

31694. How are they doing?—They are thriving well. I am growing Pusa 4 and Pusa 12 under well irrigation.

31695 What are the improved varieties?—A 115 from Hoshangabad, A 68 and A 85

31696. Are they greatly displacing the country wheat, do you think? Is the area under these wheats increasing?—I am distributing certain varieties of *pissi* wheat to the local growers.

31697 On what basis do you distribute?—I sell on cash

31698. Cash on the spot? Or do you lend for a certain period?—I sell for cash on the spot

31699. Are you engaged in any moneylending to your own tenants?—No.

31700 None at all?—None at all.

31701 I see your note with gratitude that the Agricultural Department has rendered important services, but you think they might do more. Do you think they could do more with the means at their disposal or do you think they should be given more financial means so as to carry out their work?—I think they have not got sufficient staff to carry on the work.

31702 They have not got enough demonstrators; is that the principal thing?—Yes.

31703. There are not enough men working in the countryside?—Yes, there are not enough men.

31704. I see here, to go back to the question of fodder, that you have noted that lucerne and clover are the two important fodder crops Have you grown any on your own land at all?—I do grow lucerne.

31705. Has it been a success?—Yes

31706. How many acres have you got under it?—4 acres.

31707 How many pairs of bullocks have you got?—60 in all, but I do not feed them all on lucerne

31708. I understand that from the number of bullocks you have and the quantity of lucerne you grow. Do you keep your bullocks throughout the year?—Yes.

31709. You do not sell and buy again?—No.

31710. Do you notice a growing confidence on the part of the ordinary cultivator in the recommendations of the Agricultural Department? Do you think there is a growing demand for advice and help?—I think so, but so far as my tahsil is concerned, it has been neglected by the Agricultural Department.

31711. You seem to have got the Pusa wheat all right?—That I did on my own accord.

31712. And in cotton you have got improved varieties, have you not?—Yes.

31713. There is a remark on page 387 of your note which I do not quite understand. I do not know what you mean by the practice of "hot iron touch". What exactly is a "hot iron touch"?—Suppose a bullock is unhealthy owing to some stomach trouble or some other reason, then people bring an iron sickle, make it hot in the oven and make a mark with it on the body of the bullock. Even the men sometimes, when they have a headache or something of that sort make a mark with that on the forehead.

31714. *Sir Ganga Ram*: You say that in the Poona College the engineering side is weak?—Yes, they are not giving sufficient training except in oil-engines.

31715. Can those boys design a suitable kind of pump?—No

31716. Can they take the discharge of a well?—No; they cannot.

31717 Can you take the dischage of a well?—Yes.

31718. What discharge does your well give, how many gallons per hour?—6,000 gallons per hour.

31719. So much for one well?—Yes.

31720. It is worked by an oil-engine?—Yes.

31721 You have got two wells?— Yes, in different places.

31722. Are they circular or rectangular?—Circular.

31723. You say the beardless varieties of wheat are not good?—Yes, they are damaged by wild animals

31724. What about the Pusa varieties?—They are beardless.

31725. Which variety of wheat do you grow?—A 115 from Hoshangabad farm, it is largely grown in Betul and Hoshangabad districts.

31726. Can you tell me what rotation you follow in your cropping?—I have a three years rotation In the first year I plough my land and grow wheat, and next year I grow gram. Gram is a leguminous crop and it adds something to the soil; in the third year I grow cotton again.

31727. What is this cotton you call *buri*? Under what name does it sell in the bazar?—It goes under its own name of *buri* in the Burhanpur market. There are very few cultivators who grow *buri*.

31728. What is the yield per acre?—Three-fourths of the yield of *roseum*, it yields about 2½ maunds.

31729. Clean cotton?—No, whole cotton, *kapas*.

31730. Do you call that a good yield?—No

31731. Then why have you taken to it?—I have not taken to it It does not fetch a good price.

31732. What is the best one in your experience?—*Roseum*.

31733. What is the yield?—About 4 to 5 maunds per acre of *kapas*.

31734. That is not a good yield. What is a maund?—Forty seers, Bengal measure.

Roseum in the Punjab gives a yield up to 12 maunds

31735. You do not of course require irrigation? In what month do you plant?—In June. The first picking is commenced in the month of November.

31736. Do you do any fruit culture?—No.

31737. Do you grow a lot of vegetables?—On a small scale.

31738 *Sir Thomas Middleton*: On page 388 of your evidence you refer to the estimates made of crops in your district and you complain that the *patwaris* who make the estimates are not well qualified. What proof have you got of this?—I had one case

in the year 1924 when we did not even have the first picking of cotton in the month of December and the *patwaris* reported the cotton crop to be 14 annas. I reported the matter myself to the then Deputy Commissioner at Amraoti, and after some time he came and he and I went to the spot. We took some cultivators with us and then we found that the crop was not more than 6 annas.

31739. Was that a case of just one *patwari* or were there more than one?—Generally, all the *patwaris* do this. I make enquiries from them and they always give me false reports, probably to please their higher officers

31740. *Sir Ganga Ram*: You do not give them *faslana*, *i.e.*, allowances at harvest time?—No

31741. *Sir Thomas Middleton* Do you grow no *kharif juar* on your 800 acres?—Yes, about 40 to 50 acres.

31742. Is that enough for all the fodder you require on your estate?—It is enough for my servants.

31743. You must have a large area of fallow in the *kharif* season?—I grow cotton. I use half the area on my estate for cotton and *juar* and the rest for *rabi* crops, that is about 400 under *kharif* and 400 under *rabi*.

31744 But during the *kharif* season about 400 acres will be fallow?—Yes, preparing for the *rabi*.

31745. How much of your *rabi* crop is wheat and how much gram?—About 200 acres wheat, 100 acres gram and 100 acres miscellaneous crops.

31746. What miscellaneous crops?—Lentil, coriander, linseed, *lakh*, etc.

31747. Have you tried growing ground-nut on your land?—It is not fit for ground-nut, it is too heavy.

31748. *Sir Ganga Ram*: No rape seed?—No

31749. *Sir Thomas Middleton*. How many agents do you require to look after these 800 acres?—I have two agents.

31750. Is each of these men put in charge of about half the area?—Yes.

31751. Are they paid entirely in cash or partly in cash? Do you give them a bonus on the results?—No

31752 Have either of these men been to college like yourself?—No, but they have got a lot of experience. One of my agents has been cultivating for the last thirty-five years.

31753 And you find that the combination of your college training and their experience is useful?—Yes.

31754 You mentioned that you get one rupee per maund more for your cotton than the average market price That is for clean cotton?—Not for clean cotton, it is for *kapas*.

31755. That is a large advance?—Yes.

31756. Have you any special new strain, or any particularly good kind of *roseum* cotton?—Not anything like that, but the brokers and middlemen cheat the cultivators with different rates.

31757. Are you well satisfied with the *roseum* cotton you are growing?—Yes

31758. Have you had much wilt disease?—Not in my place.

31759. *Prof. Gangulee* In the neighbourhood?—Yes, but not on my land. In the adjoining district of Nimar they have had wilt

31760. *Sir Ganga Ram*: You have not tried Punjab-American cotton?—No

31761. *Sir Thomas Middleton*: You have got about 60 pairs of bullocks How many cows have you?—About 80 cows; they are not the milking breed. I keep them for breeding purposes and for manurial purposes only

31762. You must have a large quantity of manure to dispose of?—Yes, I use the manure myself.

MR. AMANAT ALI.

31763. On what crop does the manure go ?—First on my irrigated crops and then on cotton.

31764. How much of your cotton land will you be able to manure each year ?—Not more than 100 acres.

31765. About how much do you generally give ?—About 10 cart loads per acre

31766 Can you see a very marked result from those 10 cart loads ?—Yes.

31767. Have you made any estimate as to the increased amount of cotton you get ?—I get about 25 per cent more yield.

31768. You mentioned that you were getting five maunds of *kapas* per acre. That is a very high yield for your district ?—It is normal

31769 What is the yield this year ?—This year is a very bad year. I shall hardly get two maunds per acre.

31770 *Dr. Hyder*: You suggest that to avoid this wasteful practice of burning cowdung *bona fide* agriculturists should be allowed to take fuel free from the Government forests. Do you not see the possibility of re-selling it to people who are not *bona fide* agriculturists ? Would not this question arise ? They cannot sell it because they would not be able to remove it outside the locality, there are different *nakas* where they are checked by the forest people

31771. Are you satisfied with this *buri* cotton or would you like to have more varieties ?—Yes, I want more varieties.

31772. Have you ever corresponded with the man who is in charge of the department at Akola ? I have not corresponded with him but I know that they have not got a better variety of *roseum* or *buri*

31773. He should be able to put you on the track What is this difficulty with regard to the cutting of trees in areas which are infested with wild animals ? Is it because the land belongs to the malguzars ?—No, the land belongs to the Government but the ryot is not allowed to cut trees growing on the banks of *nullahs*

31774 Do the *nullahs* run through the ryots' lands ?—Yes, for instance, a big *nullah* runs through my farm and there are many trees growing on the banks of that *nullah* which I am not allowed to cut and these trees harbour wild animals

31775 *The Chairman* But do they not help to keep the banks of the *nullah* solid and thus prevent erosion ?—Yes, to a certain extent.

If you cut those trees they would cease to do that

31776. *Sir Henry Lawrence* What is the reason for that prohibition ?—In order to prevent the erosion of the soil

31777. *The Raja of Parlakimedi* You say that the cultivators are practically ruined by the moneylenders. May I know what is the rate of interest charged ?—At my place they charge 100 to 300 per cent

31778. And when do they recover ? Do they recover quarterly, or half yearly ?—They recover sometimes only the interest and the original amount is left as it is, or they add some more interest to the principal and it increases every year

31779. Does this system apply when it is collected in cash as well as in kind ?—Yes.

31780 For cash and kind the same rate of interest is charged ?—Yes.

31781 Do you not try to protect your cultivators by advancing money to them ?—I do not do any moneylending business myself.

31782. Simply as a philanthropic measure, do you not advance any money to them ?—I do not

31783 You simply pay their salary, and if they have to borrow you leave them to the moneylender ?—Yes

MR. AMANAT ALI.

31784. In your part of the country, do you observe among the ryots a general tendency towards taking up improved methods of agriculture?—They are quite ignorant of all these methods, they do not know whether any Agricultural Department exists in the Province.

31785. You are adopting improved methods? Yes.

31786. Do you not give your neighbouring ryots the opportunity to come and see what you are doing?—Unless they are well canvassed, they are indifferent to all this I cannot do propaganda work myself, as I have to look after my own lands.

31787. Is your land in an isolated area?—It is all cultivated area

31788 Your farm exists in the midst of cultivated area? - Yes

31789. Do the neighbouring cultivators try to adopt some of your methods?—Some of them take improved varieties of seed from me

31790. Do you always welcome that sort of thing?—Yes

31791. Has that practice been growing year by year?—Not much

31792. What fertilisers do you use?—Farmyard manure, I do not use artificial fertilisers

31793 Are the ryots in your neighbourhood copying the same methods of applying manure?—Yes.

31794. Do they use farmyard manure?—Yes, but a lot of manure is wasted for burning and plastering purposes They plaster their walls and floors with cowdang.

31795 For your own fuel purposes, how do you manage?—I get fuel from the jungle

31796. Is it by application to the Forest Department?—We pay them regular fees, and we obtain a license from them Whenever we want to cart loads of fuel, we buy the license and bring the fuel

31797. What is the rate charged per cart-load?—The rate is 8 annas per cart-load of dry fuel

31798. Do they restrict you from removing any superior material?—Yes.

31799 Do they give you a list of timbers that you are not to touch?—Yes

31800. To meet your demand for fuel, have you ever thought of raising a plantation?—No that would mean that I would have to leave out a large area of land.

31801 Can you not grow it on your field banks?—No

31802 The whole of your land is under cultivation?—Yes

31803. You say that in Government farms lucerne and clover are grown. Is it because Guinea grass will not grow in that locality?—I cannot say.

31804 Do you not know Guinea grass?—Yes, I do

31805. Do you not think it would grow better than lucerne if you tried it?—I have no experience of that.

31806. You say that your part of the country is much affected by pigs?—Yes

31807. Is it entirely from Government forests or from malguzar forests also?—We have no malguzar system in Berar, it is entirely from Government reserved forests.

31808. Are there any restrictions laid down which hamper the destruction of these animals?—We cannot go to Government forests for killing any wild animals or game unless we obtain a permit

31809 But when they come to your fields, you can kill them? Yes, and we do.

31810 With greater organisation, can you not take more effective measures to scare away these animals from coming to the fields?—We can drive them to the forest demarcation line, but we cannot enter the forest.

31811. But there must be some distance between the forest and your fields?—The forest is within 4 miles of the village.

31812. When you suggest a free grant of licenses to cultivators, do you mean only for pigs or for all animals?—All wild animals which damage crops, pigs, deer, and other animals.

31813 Would you not restrict it to areas adjoining cultivation?—No.

31814. Right through you would suggest the grant of free licenses?—Yes.

31815. *Sir James MacKenna*: Do you know many young gentlemen of your own class who have taken courses at the Agricultural College and gone back to their own estates?—Only a very few.

31816. I asked you the question, because I think you are the first gentleman of that kind whom we have had the pleasure of meeting. Do you think there is real demand for agricultural education from young men of your class?—Yes.

31817. Do you think that the college should cater for gentlemen like yourself?—Yes.

31818. *Prof. Gangulee*: Are you a member of the Tahsil Agricultural Association?—I am not. There is no Tahsil Agricultural Association in my tahsil.

31819 You are in touch with the Department of Agriculture?—Yes, I am.

31820 In what way are you in touch with it?—I get improved varieties of seed from them, and I get machinery through their advice

31821. Do the officers of the Agricultural Department visit your farm?—They visited it once, a few days back.

31822. In what connection?—They wanted to inspect my well and the irrigation scheme at my place.

31823. When you require any assistance from the Agricultural Department you write to them?—Yes.

31824. How far from your farm is the nearest seed depôt?—Akola or Hoshangabad.

31825. Do you yourself distribute seed to the neighbouring farmers?—I do, if they come to me.

31826. You have just said that the farmers in the neighbourhood are not aware of the existence of the Department of Agriculture. Have you made it known to them?—I have made it known to them. I have spoken to the department so many times about it.

31827. On page 386, you say that very little has been done to popularise the use of improved fertilisers. What fertilisers have you in mind?—Ammonium sulphate, nitrate of soda, and phosphates.

31828. You have been experimenting with those fertilisers?—I do not have any experience of them on my own land, but I had some experience of them in the college.

31829. You have never tried any phosphatic or nitrogenous manures?—No, because I get cowdung.

31830. When you spoke of improved fertilisers, you merely spoke from your previous experience in the college?—Yes, and from the reports of the department.

31831. Do you keep farm costings and accounts?—Yes, I do.

31832. I take it that you practise dry farming?—Yes.

31833. You say in your note that the increase in yield does not compensate the cost. Do you base that remark on your own observation or your own experience?—It is based on the reports of the Agricultural Department.

31834. You practise dry farming?—Yes.

31835. And you say here that increase in yield does not compensate the cost?—Yes.

31836. Has that been your experience?—That has not been my own experience but I know that it is so from the reports of the department and of those people who have experimented on it.

31837. In your own experience it does pay?—I have not tried it; I think it will not pay. Artificial fertilisers are very costly, and it is quite impracticable to apply them on dry farm practice.

31838. It is quite impossible?—Yes.

31839. Do you carry on any experiments in your farm?—I do.

31840 What is the nature of your trials?—They are varietal experiments.

31841. Do you have frequent outbreaks of cattle disease in your neighourhood?—Yes, we have them sometimes.

31842. Do your own cattle suffer from any disease?—Yes.

31843. Who treats your cattle when they need veterinary help?—There is a Veterinary Asisstant belonging to the department.

31844. On page 387 you say that inattention on the part of Veterinary Assistants and their demands for fees discourage the cultivators still more. Do you have any specific instances in mind?—I have one case.

31845. There have been complaints from the neighbouring farmers?—It is a complaint from myself.

31846. Is that the opinion of the neighbouring farmers?—It is. In one case, the Veterinary Assistant visited my cattle twice and afterwards sent me a bill of Rs. 5 per visit I re-directed the bill to the Deputy Commisioner. He consulted the Veterinary Inspector, and decided that the Veterinary Assistant had no power to demand fees, that it was his duty to treat the cases free of charge.

31847. What happened to your application?—They instructed the man not to charge me anything.

31848. Do you buy cotton from the neighouring farmers?—No.

31849. *Mr Calvert*: From your experience, do you believe that the proper method of propaganda is to demonstrate to the bigger landowners, or to try and demonstrate to groups of small cultivators?—It is better to demonstrate to groups of small cultivators.

31850. Do you think that there is any scope for educated gentlemen like yourself to increase their income by taking in apprentices and teaching them agriculture in return for fees?—I think so.

31851. There might be scope for it?—Yes.

31852. *Sir Thomas Middleton*: You stated in reply to a question by me that 400 lbs of *kapas* was your normal crop. What do you mean by normal? Was that a 13 anna crop?—Yes, it was a 13 anna crop.

31853. You keep about 80 cows for breeding purposes. What breed are they?—The local hill breed.

31854. Do you employ bulls from your own district, or do you import bulls?—I have got one Montgomery bull from the department. I have selected cows for milking purposes, and I leave the stud bull with them.

31855. But for general breeding purposes, what bull do you use?—Our own local breed.

31856. When these cows calve, do you allow them any cotton seed?—No.

31857. None at all?—No.

31858. How are they fed?—They are fed on green grass and dry fodder, wheat chaff, etc.

31859. They will be calving, many of them I suppose, in April, when you have no green fodder?—I keep the herd of cows in the jungle where we have dense forest and I pay fees to the Forest Department. On the banks of *nullahs* and streams in the forest, there is green grass growing even in the months of April and May.

13860. I thought you kept your cows on your own farm?—No.

31861. *Sir Henry Lawrence*: What fees do you pay to the Forest Department?—8 annas per cow.

31862. *Sir Thomas Middleton*: 8 annas per cow for what length of time?—For the whole year.

31863. *The Chairman*: What is your ginning percentage?—For *roseum* it is about 39.

31864. How often do you plough when you are preparing land for cotton?—Once in three years

31865. And for wheat?—I follow a rotation. I plough my land for wheat, and then grow gram and cotton, and in the fourth year I plough the land for wheat.

31866. Your land is actually ploughed once in three years?—Yes.

31867 What form of tillage do you carry out in between these ploughings?—Do you break up the surface with an iron harrow, or anything of that sort?—Yes, I use an improved disc harrow and an ordinary country blade harrow.

3.868. *Sir Ganga Ram*: What the Chairman wanted to ask you was, how many times you plough before putting the seed in?—I only plough once in three years. I harrow before putting the seed in, at least 6 times in the case of wheat and 4 in the case of cotton, with a disc or blade harrow.

(The witness withdrew.)

MR. B. G. KHAPARDE, B.A., LL.B., M.L.C., AMRAOTI.

Replies to the Questionnaire.

QUESTION 1—RESEARCH.—The indigenous theory and traditional methods of agriculture in Berar are so simple that they do not admit of much labour on research in that direction. As to the scientific value of the same it should not be difficult to determine it when they are compared with the modern methods and the experiments carried on in Government farms. What is really needed is the gradual transformation of the "traditional" methods of agriculture into the modern methods, as the Berar agriculturist is slow in adopting anything new of which he has no experience and does not believe in giving up old methods in favour of a new one.

The research department should be independent of the administrative department of agriculture and the administrative department should include propaganda work.

The research as well as administrative branches should be entirely in the hands of Indians A capable person who can take charge of the research department should be found in India. The word "Expert" generally connotes a foreigner who comes out to India with ideas of his own and is completely ignorant of local conditions. He takes a long time to acquaint himself with the local conditions and needs and considers himself too superior to take advice from indigenous experienced men and mismanages the department in his charge. By the time he gathers enough of experience it is time for him to retire and he goes out of India, and with him go all the useful researches if he had made any An Indian, on the other hand, lives and dies in India and even after his retirement he can be useful to the public in various ways.

The public should not be taxed either directly or indirectly for carrying on the research work. The public is kept generally ignorant of what goes on in the laboratory from day to day; and as no time can be fixed for a particular research being made successful on account of the nature of the work of the department, its head can always speak of experiments being conducted without pointing out definite results and this is supposed to be a good excuse for the want of any tangible result.

As for financing I suggest that, after anything beneficial is found as a result of any research work, the agriculturists who want to take advantage of such results should be charged small fees for making use of that knowledge. This will put to test the real utility of the research and the cost of the research can always be realised if the research is really worth anything. It will also give work to the propaganda department as they will have necessarily to spread wide the knowledge of such research and induce the agriculturist to put it to test and use the same. The research is bound to pay its own costs and be popular if it is really useful. No money should be spent on travelling and visits of experts, either to parts of India other than the one in which the institute is located or other countries, unless a strong case is made out for such visits and sanction for the same is accorded either by the central or local Council as the case may be.

(*c*) Cotton crops are often spoiled or completely destroyed by a kind of worm which eats up the leaves and cotton bolls. The same thing often happens to *tur*. A particular kind of weather condition is supposed to bring on this trouble. The real causes leading to this disaster can be investigated and if they are found out immense good can be done to the agriculturist.

QUESTION 2—AGRICULTURAL EDUCATION.—(i) There is no institution in Berar for agricultural education and the want is very much felt.

(ii) There is an urgent need for teaching facilities in all districts of Berar and I suggest that such an institution be established at some central place in Berar, *e.g*, Amraoti or Akola. One institution in each district may be established later on, as necessity arises.

(iii) Yes.

(iv) The only stimulant for a demand for agricultural instruction seems to be a prospect of making money which the student does not hope to come by otherwise.

(viii) Nature study is useful to all students in schools and may be made a compulsory subject. So are school plots on a small scale. But school farming should be kept optional and only those who expect to do farming in their future careers may be expected to work on the school farm. The other courses of study will need to be revised. As it is, the boys are overworked in the schools.

MR. B. G. KHAPARDE.

(ix) Those who have studied agriculture have done so with a hope of securing some kind of service. Even those who have land of their own have not taken to agriculture but have sought other employments if they could not secure a post in Government service.

(x) The only way to make agriculture attractive to middle-class youths is to demonstrate to them that for a proportionate expenditure of time, energy and money, they have a better prospect in this line than in any other.

(xii) I have heard of several schemes of adult education if that phrase means only reading and writing. Tapswi Babasaheb Prajanjpe's scheme has been tried in some parts of Yeotmal district with varying degrees of success Mr. Mande who has lately come back from America has a workable scheme and those that have closely examined it think it to be a very good scheme of adult education and one which promises well. Mr. Mande has given some popular demonstrations of the same in several places with great success. If "education" includes also other things such as powers of observation, manners and morals, I think an adult person in rural tracts of Berar is, man for man, as good as any in other parts of the country.

(xiii) The schools started partly for agricultural instruction should be controlled by the Agricultural Department. The expenditure for these schools should be met from the fees that may be realised from the pubils, donations from well-wishers, and the grants from Government. In no case should these institutions be additional burden on the land.

QUESTION 3—DEMONSTRATION AND PROPAGANDA.—(*a*) Nothing improves the practice of cultivators better than actual demonstrations.

(*b*) The effectiveness of the field demonstration can be increased by occasional agricultural shows in which encouragement should be given to those who produce the best articles, and by touring lecturers who can speak the language of the people among whom they move Demonstrations should be made in the fields and on the soils of the agriculturist, even at the cost of the Government if necessary. Men of limited means should be shown how things can be managed more economically and how machinery or improved implements can be used to save labour.

(*c*) Cultivators are very slow to adopt expert advice because they do not believe in experts. They believe in their own methods and unless other methods are shown to them to be superior to theirs by actual demonstration, they will not adopt them. Nothing will be gained if the expert waits for them to come to him for advice The expert must approach them, be not discouraged by their apathy, persist in giving his advice, and be not disappointed if it is not adopted. If this continues for some time and if people find that those who adopted expert advice have derived profit, the villager may be expected to take an interest in the matter.

(*d*) On my own land, a particular method of sowing cotton was adopted with some advantage. The villagers round about noted the same from year to year and never adopted it because they thought it would be costly on a large scale and might prove a failure in the end. The Berar peasant is very conservative and takes a long time to imbibe new ideas.

QUESTION 4—ADMINISTRATION.—(*a*) and (*b*). The Government of India will be able usefully to supplement the activities of the Local Government if it does not rigidly control the Local Government in its activities, but contents itself by giving advice when asked for. In case the Government of India rigidly controls the provincial activities, misunderstanding is likely to arise. The Government of India may not always appreciate the particular conditions that obtain in a particular Province. I do not think that the expert scientific knowledge required for the development of agriculture in the different Provinces could be supplied to a greater extent than is the case at present by increasing the staff of the Government of India. The local and provincial conditions vary so much and their needs are so different that it does not seem practicable to collect a staff together which will be able to cope with the requirements of all Provinces It will be disproportionately costly and comparatively less useful.

(*c*) (iii) The condition of roads in the country in Berar is very unsatisfactory and need special attention as they cause very great inconvenience to the cultivators.

(iv) The Meteorological Department is practically non-existent, so far as the Berar agriculturist is concerned, a useful purpose might be served if the agriculturist is placed in possession of correct information about the likely changes in the weather, to enable him to guide his activities accordingly. It is likely that the agriculturist in Berar who entirely depends on the mercies of nature will be immensely benefited by such information.

MR. B. G. KHAPARDE.

(v) and (vi) The Posts and Telegraph services are inadequate. More villages should be linked by opening more post offices. This may not be possible from a merely commercial point of view but is essential for the benefit of the agriculturist.

QUESTION 5—FINANCE.—The general indebtedness of the agriculturist in Berar is increasing as may be seen from the reports of the Registration Department. The co-operative societies should be induced to advance loans at cheaper rates. The land, on an average, does not return more than about 8 to 10 annas interest (per cent per month) on the capital and the expenses of cultivation This means that in order to be able to make a margin of profit and render agriculture reasonably paying, the agriculturist should be able to borrow money at less then 6 per cent per annum. At present, the agriculturist of Berar sticks to his land more from a sentimental point of view than from a commercial point of view and feeds himself on the uncertain hope of getting a good harvest every year. On account of the fluctuation of the market within a very wide margin, his income is extremely uncertain and he runs considerable risks in borrowing at high rates. Co-operative societies therefore must be started with the avowed object of giving capital at a cheap rate of interest and a regular propaganda is necessary even then to induce the agriculturist to take advantage of these institutions. The average agriculturist is very reluctant to go through the formalities of filling in several forms, and, never being accustomed to make punctual payments, feels that the society rules work very hard against him Not infrequently, he chooses to undertake to pay a high rate of interest and mortgages his lands with a moneylender rather than take advantage of a co-operative society. The stringent manner in which the rules of the society have sometimes to be worked out go against the gain with him and he chooses to deal with an individual, and prefers to take the chance of mercy and tolerance being shown to him in times of distress and need rather than deal with a corporate body where mere personal relations cannot help him very far.

At present, in the large majority of cases, long and short term credit is provided by the *sowcar*, the moneylender I am not aware how far the co-operative societies will be able to accommodate the cultivator for short-term credit. But if this cannot be done, the agriculturist will necessarily have to depend on the moneylender for his short-term credit. But the cases of promissory notes being given by agriculturists in Berar for borrowing money for cultivation are very rare indeed and do not raise any serious question.

(*b*) I think the problem is otherwise. It is the Government in Berar which is not very anxious to advance Government loans of *taccavi*. In Yeotmal district, *taccavi* was persistently asked for and refused some time ago The procedure adopted by the Governmet in advancing loans is irksome and dilatory and it is necessary to adopt some other speedy method. Perhaps the proposal of maintaining a special staff for this purpose, either permanently or temporarily, may be considered with advantage. It is also necessary that some attention should be given to see how the loan is utilised Some cases of misuse have been observed.

QUESTION 6—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The main causes of borrowing are want of method in life, want of foresight, enhanced cost of living on account of the prices of necessities having gone up, shortage of rain, and consequent frequency of years of scarcity and famine.

(ii) The main source of credit is the moneylender, *sowcar*. Co-operative societies also come in but they are not the chief source Government help does not count for much as it is on a very small scale comparatively

(iii) The main reason that prevents repayment is the same as causes the necessity of borrowing. Very often the cultivators borrow with a full hope of a good harvest and are confronted by a bad year Successive bad years are not an infrequent occurrence. Want of frugal habits also adds to the evil Sometimes the moneylender creates a sense of ease in the debtor, purposely with a view to increase the debt when he is sure that his money is safe.

(*b*) It would be worth while to try an experiment by taking measures to deal with rural insolvency, and the application of the Usurious Loans Act. Redemption of mortgages may be faichtated by relaxing the law a bit. But this may not prove very effective as redemption suits are comparatively few.

(*c*) Measures taken to restrict or control the credit of cultivators by limiting the right of mortgage or sale may hamper the agriculturist in his life and daily dealings. Perhaps they may frustrate the very object for which they have been adopted. Such restrictions may hamper the free distribution of land and militate against the rights of ownership in land of the cultivator. Such measures may turn out intensely unpopular and defeat their own purpose.

MR. B. G. KHAPARDE.

QUESTION 7—FRAGMENTATION OF HOLDINGS.—(*a*) So far the problem of fragmentation of holdings is not in any way serious in Berar. Small holdings in Berar are not uneconomical merely because they are small. An owner of a small holding incurs proportionately small expenses and sometimes he is better off in that respect than the owners of comparatively large holdings, as he and his family work in the field and thus save the cost of labour; he may also get the field operations done by hiring bullocks from his neighbour and rid himself of all expenses attendant on their ownership.

(*l*) I do not think any fresh legislation is called for on this account. The present law is competent to deal with all cases likely to arise.

QUESTION 8—IRRIGATION.—We, in Berar, are so hard up for water that the thought of irrigation looks more like a dream than a reality. There are very few tracts where irrigation may be possible but that problem has not yet been gone into. There was a discussion about it in the local Legisative Council but nothing has yet come out of it.

QUESTION 9—SOILS.—(*a*) (i) and (ii) Drainage for draining off the rain water from fields is necessary in many cases in Berar. The average cultivator is generally ignorant of the principles of drainage and is content to bear with such loss as may occur rather than worry himself about it. A survey of all the Berar land should be undertaken from this point of view and the owner of the soil should be advised *gratis* as to the steps it may be necessary for him to take on this account. Cultivators should be shown how an economical and systematic *bund* may be erected to prevent a rush of water on the land and the washing away of the soil.

(*b*) I can give an instance of my own soil having undergone marked improvement within my recollection. I own a field near Ellichpur at Khudanpur. In a part of the field, there was a gradual slope over which the rain water flowed freely and swept off the surface soil. I got a long *bund* of loose stones erected at the end where the slope terminated and allowed it to stand for some years. The consequence was that earth from other part of the field gradually accumulated near the *bund* year by year till the whole slope became a level and no water accumulated as it percolated through the loose stone wall. The field is now almost level and the soil near the *bund* is the most productive part of the field. A different part of the same field is being swept off year by year by a river when it is in flood during the rains with the consequence that that particular part of the field has visibly deteriorated

(*c*) I have not known instances of cultivable land going out of cultivation unless on account of being reserved as a pasture by the owner for his cattle or for some other purpose. But if the land has gone out of cultivation on economical grounds, *i.e*, if it is not possible to take out of it even what is spent on it in tilling and cultivating and in Government assessment, the only way of bringing it under cultivation is to reduce the assessment or give other facilities to the owner to induce him to work on the land.

QUESTION 10—FERTILISERS.—In my opinion, greater use could profitably be made of natural manures rather than artificial fertilisers under conditions obtaining in Berar. In the first place, the cultivator has not much new to learn as he has been using them. In the second place, he can obtain them from his own and his neighbours' animals, and thirdly, he finds them cheap and knows the proportion in which to use them. Artificial fertilisers are more costly. They are as a rule more concentrated and need a regular supply of water, which the Berar cultivator cannot obtain as he has to depend on the rains. Artificial fertilisers can be effectively used on irrigated lands as the cultivator is able to control the supply of water. The cultivator in Berar ought to be taught how to economise and conserve his resources. He should be taught the use of dung pits, the way in which they ought to be constructed and the way in which they should be filled. Ordinarily, the pit is not protected either on the sides or from above and the ingredients which supply food to the plant disappear in the soil of the pit or are rendered ineffective by the sun. I have seen a farmer ingeniously protecting his pit from sunshine by planting papaya trees round about it so that he derived fruit from the trees while their shade protected the ammonia in the manure. Another direction in which improvement is possible is to teach the cultivator to accumulate the urine of his cattle by contriving to soak in it some cheap absorbent, such as useless straw or black soil, and store it in the pit every day. A lair of this material, followed by another of waste grass and dung alternately, has been found of great use by me in my farm. The cultivator must be taught also the use of ash which is daily thrown away as waste. A minute study of the habits of the villagers will reveal many ways of helping them to an observant eye. If the Agricultural Department shows a genuine sympathy towards the village cultivator and tries to improve his method rather than saddle new ones on him, I think much can be done in this direction.

MR. B. G. KHAPARDE.

(*e*) New and improved fertilisers can be popularised only if it can be demonstrated to the cultivator that they are cheap in the end and yield better results than the fertilisers he uses, and even the ordinary average cultivator of Berar will watch the experiment for two or three years before he can be induced to use them. The best way of doing this is to select a few typical villages where the majority of the cultivators are comparatively more intelligent than the average, and where a wealthy sympathetic and intelligent man resides; experiments at Government cost must be shown to the villagers so as to get them popularised and advertised. Products of these fertilisers should be shown in shows and exhibitions.

(*f*) I think it is impracticable to prevent entirely the use of cowdung as fuel until equally cheap or more cheap, and equally readily obtainable fuel, is substituted for it, which under the present circumstances looks very improbable of achievement. Wood under all circumstances is more scarce and more costly. Coal cannot reach the interior of the country and the villages. The use of kerosine oil and stoves is out of the question unless serious inconvenience and very frequent and fatal accidents are bargained for

QUESTION 11—CROPS.—(*a*) (i) and (ii). Existing crops can be improved by a more scientific method of sowing them. I have been able to show marked improvement in the cotton crop by sowing the plants at the distance of at least 12" to 16" in squares. This gives them more room for growth under the soil, more air and light, and the stems of the bolls become more stout so that the bolls or leaves do not drop in case heat radiates from the soil after a light shower. In thickly sown cotton this is invariably the case. The same is true of *juar* and *tur*. A rotation which includes ground-nut crops keeps up the strength and fertility of the soil. Very often a part of the field is very thickly sown with *juar* so that the cane is thin and serves as a good fodder, while the rest of the field is sown by the ordinary method. I have seen thornless cactus being grown in Madras which serves as fodder in famine times.

(iv) Amongst wild animals, pigs cause the most devastation and measures should be adopted to kill them. A free grant of licenses for guns is one of the solutions. Parties of hunters may be formed and their services may be utilised by the villages most infected by these animals. Special attention should be given also to loose cattle which do very great damage to the crops.

(*b*) Ground-nut can be cultivated with advantage It is to be regretted that the old Indian long seed is dying out and is being replaced by one of the new sort which is short and round. The latter has more percentage of oil and pays more, commercially, while the former is more valuable as food as it does not disturb the liver.

(*c*) See (*a*) (i) and (ii) above.

QUESTION 12—CULTIVATION —(i) The existing system of tillage can be improved upon by a judicious use of the plough. Some cultivators in their anxiety to secure good crops plough the land too often. I think ploughing the land once in four or five years should keep it in good condition. The agriculturist has recently taken to hoeing more seriously and has begun to understand its importance and use beyond mere removal of weeds. The agriculturist ought to be given to understand how the moisture is preserved in the soil by disturbing the uppermost surface of the soil.

(ii) Very often cotton is repeatedly sown with the hope of securing more money. But the cultivator has found out that this spoils the land and reduces its fertility. It is customary to rotate *juar* with cotton. Since the introduction of ground nut it is rotated with *juar* and cotton. *Til* and linseed are sown off and on and *baru* is sown in fields which have ceased to give proper yield. *Baru* is a good green manure and if rotated once in 5 to 7 years helps to keep up the quality of the soil. But as it does not bring in as much money as other crops do, cultivators are generally reluctant to sow the same unless the quality of the soil has gone down to an appreciable degree and has ceased to yield a heavy crop Wheat and gram absorb the nutritious elements in the soil more than any other crop while *lakh* can be produced in comparatively unproductive soil. The experimental farms ought to settle a course of rotation after careful experiments, and give advice accordingly to the village cultivators after examining the local conditions and the quality of the soil.

QUESTION 13—CROP PROTECTION.—I have not observed any efficacious method being adopted for the prevention of external infection, pests, or diseases on a large scale. Small experiments in an acre or two, even if successful, bring no benefit to an agriculturist unless they admit of being repeated on a lage scale. I have observed some plants being sprinkled with some kind of disinfectant but it is almost impossible to do so all over a field extending over several acres.

MR. B. G. KHAPARDE.

(ii) Surely it is desirable to adopt internal measures against infection. I have observed *juar* being soaked in a mixture of, I think, copper sulphate and it was claimed that a crop derived from that seed was free from being infected by a certain worm. I have not myself seen the experiment being carried out and I am not aware with what degree of success this is possible. But experiments in this and similar lines are very desirable and necessary.

QUESTION 14—IMPLEMENTS.—(*a*) The sowing implement called the *tiphan* needs some improvement to begin with In the present system of sowing, thick or thin sowing entirely depends on the operator's clumsiness or skill It is rare that uniform sowing is observed by a trained eye. Some kind of improvement must be made by which it should be possible to regulate the sowing automatically and uniformly. This will do immense good to the cultivator especially in the case of cotton a d *juar*. The growth of these crops greatly depends upon whether they are thickly or thinly sown.

The Indian hoe needs some improvement so as not to injure young plants. I have seen tractors working but have not had satisfactory reports about them. I do not believe a tractor can work very successfully on Berar soil at any rate The initial cost is prohibitive to begin with. The working cost, I am informed by those who have used them, is more than that of the Indian plough and one landholder hardly possesses lands adjoining each other to an extent which will ensure an economical use of a tractor. Indian firms with Indian capital ought to be started to manufacture new implements according to local needs, and Government should subsidise and encourage such concerns as Kirloskar's in the Deccan

(*b*) Ocular proof and demonstration are the only two means by which the Berar agriculturist may be induced to adopt new and improved machinery and implements. There should be no haste in this respect and the implements should not be forced on the cultivator. It sets him against them and creates a prejudice which may not be easy to remove.

QUESTION 15—VETERINARY.—(*c*) The agriculturist does not make full use of the veterinary dispensaries but he is gradually learning to do so. People in cities and urban areas make full use of them. The villager has no faith in the efficacy of the remedies and medicines and has a prejudice against them He is unable, often, to detect the serious nature of the malady his cattle may be suffering from. He possesses often some indigenous remedies which are very effective. The veterinary man should try to gain the confidence of the villager rather than parade his knowlege and if he can demonstrate the usefulness of his department the prejudice is bound to be gradually removed.

(*d*) Any legislation is likely to deepen the prejudice and set the average agriculturist against the department and more effort is likely to be made to evade the law than to abide by it Demonstrations, repeatedly given, and patience are the real remedies to contend against the existing prejudice. Any legislation is bound to make the department unpopular and mar its usefulness.

QUESTION 16- ANIMAL HUSBANDRY.—(i) In Berar, there is a great field for improving the cow and the bullock. The cow can be made to yield more milk than she does at present. I am informed that an attempt in this direction has been made in the Nagpur dairy farm and in the Punjab and what is known as the Montgomery bull has acquired a certain fame Bullocks should be developed on two lines, *viz.*, working bullocks and trotting bullocks, the latter for travelling and racing. The heavy bullock that is useful in pulling the plough is not active and nimble enough to run on the road and, until the country tracks are so improved as to allow the use of other vehicles safely, a bullock cart is an absolute necessity for a long time to come in Berar, and, even after these kinds of bullocks have ceased to be a necessity people will want them by way of a luxury. Milch cows giving plenty of milk are a necessity and must be developed. I have observed the breed of the buffalo being improved in Poona in the dairy farm, and as the milk and butter from a buffalo is greatly in demand as a necessity of life in communities which do not consume flesh, the improvement of the buffalo demands immediate attention. The male buffalo is in great demand for work in paddy fields in the Central Provinces and thousands of them are imported from Marwar and other parts of the country.

(ii) The dairying industry needs encouragement and attention in India in general, and in Berar in particular. The vast majority of the population in Berar depend for their nourishment on milk and on its products and preparations, and it is essential, in the interest of public health, that a plentiful supply of these should be

available at cheap rates. A dairy was opened at Amraoti some time ago but did not prove a great success owing to various reasons. Chief among these were scarcity of fodder and the consequent high cost of good unadulterated milk. I suggest that a dairy should be opened for each district and if a persistent effort is made it is bound to be not only self-supporting but paying in the end. Anyway an experiment is worth trying and its need is urgent in Berar.

(*b*) (i) Common pastures are over-stocked and the cattle suffer terribly, especially in the hot season, both for want of water and fodder.

(ii) We have grass borders in tilled fields which yield grass in the rainy season and a part of the cold weather. But these are not at all sufficient and need to be supplemented by other means of maintaining the cattle.

(iv) There is absence of green fodders in dry seasons. Green fodder, however, can be made obtainable during the dry season by storing it in well built pits while it is green. I have seen fodder in its green state being preserved in pits made for that purpose. The fodder is pressed in a manner as to squeeze out all air and a layer of common salt spread over it and another layer of fodder is laid on it again, and so on till the pit is full, when it is closed up. When green fodder is needed the pit is opened, and though, usually, the uppermost part and edges of the stuff are spoiled on account of contact with earth, the rest of the bulk of the fodder is found intact and in eatable condition and the cattle consume it and are maintained in excellent health. If this is tried successfully on a large scale it may be possible to make the problem of fodder a little easier and a satisfactory solution may be hoped for.

(v) Salt is a great factor in animal food and I have seen cattle being given salt every day but the salt duty seems to have discouraged this practice and people can ill-afford it Absence of mineral constituents in fodder and feeding stuffs has led to deterioration in the cattle

(*c*) The scarcity of fodder is most marked in this district of Amraoti, and in Berar generally from the end of March to the middle of July if the rains are timely, *i.e* when the monsoon comes on by the middle of June at the latest. If the rains delay the scarcity is prolonged in proportion Young growing cattle begin to thrive in about four to six weeks after the scarcity ends

(*d*) If the cultivator can be induced to reserve a part of his land for growing *juar* which may be stored green in the manner indicated above, in pits, and if he can forego the yield of the crop so as to save himself the expense of purchasing dear fodder at the time of scarcity, it may be possible to improve and supplement the fodder supply. Then again, if it be possible to grow thornless cactus which they tried in Madras on the estates of the Theosophical Society, it may prove a possible solution of the problem.

(*e*) Landowners may be induced to take a keener interest in these matters if it can be proved to their satisfaction that some practical scheme is possible which may save them the expense of purchasing dear fodder during the times of scarcity.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) I think the cultivator who knows his business and has a mind to go about it seriously is busy all the days of the year, roughly calculated. A man who owns more than a hundred acres of land may find more work than he can cope within a year. An average cultivator with an average holding of about 20 acres gets about 4 to 6 weeks time on his hands and I think it is a well earned rest, considering the hard work he is required to do and the poverty in which he is kept. In the slack season, if he can afford to do so, he takes rest and does not move out much under the hot sun If he is so minded he occasionally goes out on a pilgrimage or visits his relatives. If he cannot afford to do so he goes out and works for others and earns enough to keep himself and his family alive.

(*b*) Rope-making, basket-making, making small toys for selling in fairs and other small industries that do not want much capital The agriculturist does not generally look much beyond his own land.

(*c*) Bee-keeping is practically unknown so far as Berar is concerned I do not know of any experiment having been tried, nor is it possible to say if it would be practicable. Poultry rearing is done by some farmers, but is done on a small scale and a scientific method of doing so would make the industry popular. The Berar agriculturist should be induced to consume eggs on a large scale as they form a good substitute for milk and its preparations, and will encourage the industry also. Fruit growing is tried in many places in Berar but the general experience is that it is not

paying in the end and the scarcity of water makes it still more difficult. I had a large garden at Amraoti in which fruit was grown but all the trees died in one year for want of water. An attempt was made to replace them and after the young trees were reared for a year, they also died on account of the same cause. The garden is practically desolate now. Expenditure on it is more likely to prove a dead loss than bring any return. If fruit is grown in the interior of the country where it is possible to have a reliable and sufficient supply of water it is very difficult to find a market for the fruit on any large scale, and in an attempt to bring it to the railway station for export to Bombay the fruit deteriorates and does not sell well. It is essential to have good roads which will allow of goods being carried cheaply and speedily to the nearest markets or to the railway stations for export. Unless these conveniences are made available the fruit growing industry will not prosper on a large scale. Lac culture was tried by me but I found that proper advice could not be obtained which might have led to success It needs large trees and forest owned by the grower, which conditions are not available in the major part of Berar. It may be possible to encourage this industry on *ijara* lands in Yeotmal. I tried the experiment in my jungles in the Central Provinces in my malguzari villages. Rope-making and basket-making are tried by some people successfully. Of these I have known the agriculturists to make ropes but they do so to meet their own wants, and not on any extensive scale so as to turn the occupation into an industry During his leisure time the agriculturist keeps himself busy and tries to meet his own wants, and, as he does not devote all the year to this, or such like industries, he cannot develop any of them to any large extent. There is a particular caste among the Hindus who are called *Burads* and who make baskets, brooms, mats and other similar things and they throve well till their baskets were gradually replaced by iron pots, and mats of bamboo were replaced by coir mats, both of foreign make. The *Burads* are dying out now and an attempt to revive them ought to be made which, if successful would do an immense good to agriculture.

(*d*) Yes. The Government ought to do more in that line than they are doing at present But they ought not to do so merely from the commercial point of view of returns, but by way of experiment and with a genuine desire to teach the industries to Indians and encourage them to start the same on their own account

(*f*) India must be taught to make her own tools and use them, and not depend on other countries to manufacture tools for her. To study rural industries intensely with a view to introduce improved tools and appliances which presumably would be foreign would be working in the wrong direction, and would merely be encouraging Indian industries in order to find a market for foreign firms to sell their goods. That ought not to be so If the Government is so minded, I believe it is possible to study rural industries with a view to getting the required tools made and manufactured in India and to establish the industries in such a manner as to make them permanent customers, of the Indian manufacturer But unfortunately I have not yet seen any attempt made in this direction.

(*h*) The difficulty about this problem is how to make the village people understand what health conditions are If they understand these conditions and also understand their effect on health they will certainly help in improving them. For instance, it is very difficult to make the villager understand the effect of dust on health, and even if he understands the same it is very difficult to keep the dust down in the village Persistent propaganda must be made in this respect and there must be some place where prominent people from typical villages can be taken and ideal health conditions shown to them. It should be possible to make an ideal village where all health conditions are as near perfection as practicable and means must be devised to get other villagers to visit this village. A typical village which admits of improvements being made should be so improved, and, if possible, made a place of periodical fairs so as to get it visited by as many men as possible. Prominent men from villages should be taken out of their usual environment and kept for a time under more hygienic and healthy conditions for a short period, say 2 to 3 months, so as to make them appreciate the value of clean and healthy habits, and once they have done so they cannot but improve their surroundings after they go back to their villages. Mere advice and oral propaganda will not help very far. I have observed that men with unclean habits and used to unhealthy surroundings have changed their manner of life after living in towns for some time and improved the village surroundings after going back to the village. Only a few prominent men in the village need be induced to adopt a more healthy and clean mode of life; an attempt to approach every person in the village and to expect him to understand and appreciate lectures on hygiene and clean life is waste of energy and time to a large extent.

MR. B. G. KHAPARDE.

QUESTION 18.—AGRICULTURAL LABOUR.—(i) and (ii) Prospects of good wages and an easier life are the only inducements for tempting men to migrate permanently. Even then it is wrong to suppose that mere monetary prospects will induce a Berar labourer to leave his native place and migrate to another. The Berar villager attaches himself to his village and land and is reluctant to leave the same and it is not rare that he chooses to starve in his own village, where he has his relatives and friends, rather than leave his family surroundings and go to Karnatak or the Punjab, whatever the monetary prospects may be. If the labourer is given a share in the produce of the land on which he works he may be induced to migrate. Very often the Berar labourer likes to depend more on hope than on actual realities and if he is promised a share in the produce of the land on which he is called upon to work he may choose to leave his native place. In North India, labour is cheap and, very likely, it is so because the supply exceeds the demand and they migrate to Berar in search of work, but one rarely finds them working in the fields and helping the agriculturist.

Even if labour is brought from outside, the question of training them in handling agricultural implements remains unsolved, and unskilled labourers may do more harm than good.

I believe, in Berar, it would pay better to train the existing labour to work more efficiently and economically than to make an attempt to import labour for agriculture.

(ii) In tracts which are cultivable and remain uncultivated, it is practicable to induce men to go and settle on them and cultivate the land if the *ijara* system is introduced or some other system by which the cultivator will be guaranteed more money and advantages than are available in what is termed alienated or *khalsa* land. Areas that have remained uncultivated for a long time may have become malarious or dangerous on account of snakes or wild beasts and the risk the cultivator may be asked to run must be counterbalanced by equally weighty advantages before people are induced to bring them under the plough. If these tracts are measured, and charts of them are prepared and properly advertised, and proper terms are offered by the Government, it should not be difficult to bring them under cultivation. The fact that such tracts remain uncultivated for a long time is some indication of the fact that they cannot be brought under cultivation on the ordinary terms of the *khalsa* land.

(*b*) Shortage of labour was felt in Berar for some years past on account of the springing up of cotton ginning factories to which labour was attracted on account of the high rate of wage which a cultivator is unable to pay. The only remedies available seem to be (1) to import labour, if possible, (2) to train the existing labour and make it more efficient; (3) to pay the labourer higher wages and take more work out of him than he ordinarily does, and (4) to increase the hours of work.

The last mentioned item has great importance because the labourer works in the fields at present, not on the understanding of working for a certain number of hours, but he regulates his work by sunrise and sunset. The natural consequence is that the labourer works for a shorter time during the cold season than in the hot season, because the hours between sunrise and sunset are fewer in the cold weather than they are during the hot season. In the hot season the man invariably works longer than he does in the cold season while in fact the state of things ought to be just the reverse. Some measure must be adopted to induce the labourer to work by hour scale and if this can be done a certain amount of relief is bound to come to the agriculturist.

QUESTION 24.—ATTRACTING CAPITAL.—(*a*) Agriculture must, by experiment, be shown to be as paying as other concerns, if not more so; the capitalist who likes quick returns and no risks cannot easily be induced to take to agriculture as a source of money making.

(*b*) The owners of agricultural lands feel no encouragement in carrying out improvements because they always apprehend that, in case they do so, the Government assessment will be enhanced in due time. The Government policy is to increase the assessment at any settlement. The recent policy as placed before the Berar Legislative Assembly by the then Revenue Member was to wipe out the "middleman" *i.e.*, the landholder. The note on 'Settlement' by Mr. Greenfield, the then Deputy Commissioner of Buldana, clearly contemplates the enhancement of the revenue up to 50 per cent of the cultivator's profits and he makes suggestions to that effect and recommends that an enhancement of revenue should be made up to 50 per cent instead

of 3½ per cent and the period of settlement should be cut down to 20 years, instead of 30 years as at present. This policy and such recommendations are not calculated to encourage the cultivator to make improvements on his lands.

The income from agriculture is very uncertain in Berar as the agriculturist has to depend for his crops on the monsoons, and for the price of his goods on the fluctuations of the market which the Indian capitalist does not control

QUESTION 25.—WELFARE OF RURAL POPULATION —(*a*) I think panchayat committees should be established and encouraged and a special officer should be deputed for the purpose by Government.

(*b*) Yes. The enquiry should be conducted by a committee in which the representatives of the people will have a majority. I suggest that District Councils should be asked to nominate one representative each on such committee. They should move from village to village all over Berar and observe the local conditions and make a report about the remedies they may have to suggest. The scope of the enquiry should be the steps to be adopted to improve sanitation in the rural areas.

Oral Evidence.

31869. *The Chairman*: Mr Khaparde, you come from Amraoti?—Yes

31870. We are greatly obliged to you for your note, would you like to make any general statement in amplification of it at this stage?—I would rather do so after I have been examined should it seem necessary.

31871 You are engaged in the practice of agriculture?—Yes. I lived on my land for a long time and I know a great deal about it. I have not been able to live on my land since I passed my law examination and started to practise as a pleader, but I have kept in close touch with it and I supervised the work.

31872. When did you cease to manage the land itself?—About 1912

31873. You say the public should not be taxed, either directly or indirectly, for carrying on research work Do you think the practice of the whole civilised world in that respect is wrong?—No, but I think the kind of research work which is being done here is not of much use

31874 That is a different matter. You do not mean the public should not be taxed either directly or indirectly for carrying on research work?—I mean the public in Berar should not be taxed for carrying on the sort of work that is being done at the moment.

31875. What wheats are you growing on your own land at the moment?—We grow cotton and *juar*, not wheat.

31876. What cotton do you grow?—*Buri* and *roseum*

31877. What is the history of the latter? Was it recommended to you by the department?—Yes, that is why we grew it, but our experience is that although it gives a better yield than other seed it does not command a good price in the market, because it is not a long staple cotton For a time the buyers wanted a short staple cotton because it was supposed to be useful for the manufacture of foreign cloth, but afterwards the price came down and now the demand is for long staple cotton, because Indians have now taken up the manufacture of cloth more than before.

31878. Are you going to cease growing *roseum* cotton?—If I can.

31879. You give your views on the various subjects you deal with very completely and I have very few questions to ask you. I should like to know what experience you have had of the working of co-operative societies?—I have not taken much interest in the societies we have in Berar. I know they lend money to the cultivators from time to time and that awards are often taken out against debtors without their being able to make arrangements for the payment of their debts. That is how some of the societies have come to be unpopular in Berar. Berar, however, has very prosperous co-operative societies, and, I think, is the only Province which can boast of having prosperous societies.

31880. But you yourself know very little about the details of their work?—That is so.

31881. Have you experience on your own estates of the indebtedness of cultivators?—Yes.

31882. Is it a malguzari estate?—Part of it is, and part of it is ryotwari.

31883. Do you or your representatives engage in money-lending at all?—My brother does. We advance money to our tenants, and try to do so at a cheaper rate than other people charge, so as to make it as comfortable as possible for them.

31884. At what rate do you find you can make advances to them?—I have been able to finance at 6 per cent, which is the lowest I can do it at, but I think it might be possible to do it at 5 or even 4 per cent.

31885. What is your average rate?—6 per cent. It is almost all lent at that

31886. Do you find the offer of cheap money encourages cultivators to overborrow?—We take care not to give them more than they need, because we know them personally and we do not carry on an extensive business of that kind. We only lend to our tenants, and we know them and their requirements.

31887. It is a question of knowing the business of each man intimately?—Yes, to a large extent

31888. You are anxious that the opportunity to make implements in India should be taken advantage of How do you account for the fact that Indian capital and Indian brains are not at this moment exploiting this field more energetically?—I think they are. Kirloskar Brothers, for instance have been doing their best to keep India supplied with their ploughs, and Berar has purchased very many of them, the Kirloskar plough is very popular there Other people are perhaps not anxious to take it up because they are nervous about their chances of success.

31889 On page 406 you say, "If the Government is so minded, I believe it is possible to study rural industries with a view to get the required tools made and manufactured in India and to establish the industries in such a manner as to make them permanent customers of the Indian manufacturer." I do not quite see what Government can do there?—Government can give subsidies, and make it possible for the railways to carry the goods more cheaply Government can give concessions and *taccavi* loans. They have been rather shy of giving *taccavi* in Berar. Government can help the peasant in very many ways which I could mention A fresh Commission might be appointed to go into the matter. When Government is minded to do a thing, it can always find means of doing it

31890. *Mr Calvert* You say it would be worth while to try the experiment of applying the Usurious Loans Act. Is that Act not applied regularly here?—No not in Berar.

31891. Is there any particular reason for that?—No. The Act has not been applied; that is all.

31892 *Sir S. M. Chitnavis* Have you the rule of *damdopat* there?—Yes.

31893. How does it work?—Fairly well.

31894. *Mr. Calvert*:—If the courts were so minded, they would find a way of applying the Usurious Loans Act?—Not unless Government applies the Act to this Province.

31895. Does not the Act apply here?—Not as far as I know.

31896. *Sir Ganga Ram.* What area of land do you possess?—500 acres of land ryotwari and 1,500 acres malguzari.

31897. Did you take to law because you could not make a living out of it?—No. I could make a living out of it, but I took a fancy to law and I wanted to make more money; one never has sufficient money.

31898. You have said Government should do a number of things. Do you think those things would be passed by the Legislative Council? You are a member of the Council?—Yes. I think the Council would vote for them, but even when the Council passes resolutions, Government is not bound to take action on them.

31899. *The Chairman.*—Do you wish to make any supplementary statement?—Yes. I wish to say in the first place that the agriculturist in Berar is working at a loss; he makes no profit at all. Secondly, in spite of that loss he continues to cultivate his land, because he has nothing else to do and does not know how else to maintain himself, and also from sentiment. Nothing useful can be done to help the agriculturist if the land revenue is not reduced. I believe the theory that Government and not the agriculturist owns the land is a most harmful one. That is the theory on which Government has been working, and we have fought against it as far as we can. We believe the State should not own the land; the land should be owned by the person who cultivates it.

(The witness withdrew.)

The Commission then adjourned till 10 *a. m. on Wednesday, the 26th January,* 1927.

Wednesday, January 26th, 1927.

NAGPUR.

PRESENT :

The MARQUESS OF LINLITHGOW, D. L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E. C.B.

Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.

Sir JAMES MACKENNA, KT., C.I.E., I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO OF Parlakimedi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. C. U. WILLS, I.C.S.

SIR SHANKAR MADHO CHITNAVIS, KT., I.S.O. } (*Co-opted Members*).

Mr. J. A. MADAN, I.C.S.

Mr. F. W. H. SMITH. } (*Joint Secretaries*).

Lieutenant-Colonel H. G. STILES WEBB, D.P.H., D.T.M. and H. (*Cantab*), I.M.S., Offg. Director of Public Health, Central Provinces.

Replies to the Questionnaire.

Question 1.—Research.—I consider that research work should be undertaken in connection with diseases that are especially prevalent in rural areas and affect rural population. These diseases not only adversely affect the health but also the economic conditions of the agricultural worker.

The diseases I am particularly referring to are malaria, and helminthic affections, and possibly to a lesser extent small-pox, leprosy and tuberculosis.

Regarding helminthic affections, I am glad to state that apart from the work being done in the larger jails in the Province, a special enquiry is being carried out in the Nagpur district by Dr. Asa C. Chandler, hookworm research worker, who has been deputed for this work by the Director, Calcutta School of Tropical Medicine and Hygiene.

As submitted above, in order to improve the general health of the masses, including as it does very largely agricultural workers, it is absolutely essential to provide a Public Health Research Institute where the various problems affecting Public Health can be examined. This is the only Province in India where the Public Health Department endeavours to function without a laboratory of any sort, to do the very ordinary analytical work in connection with Public Health, to say nothing of experimental research in connection with special provincial epidemic diseases. This matter is however now being considered by Government.

Another matter that is specially essential as it particularly affects the agricultural population is the creation of a Malaria Bureau under a special Malaria Officer.

Proposals have been submitted to Government regarding this by the Public Health Department.

As things stand at present, the Director of Public Health is endeavouring to act as Chief Malaria Medical Officer and Chief Plague Medical Officer in addition to his ordinary duties.

This Province is shown in the latest map issued by the Malaria Bureau of India at Kasauli to be intensely malarious and so there is no need of mine to stress the necessity for the creation of such a Bureau.

LIEUT.-COL. H. G. STILES WEBB.

QUESTION 25.—WELFARE OF RURAL POPULATION.—I append two statements* showing the birth and death rates in rural and urban areas for the last twentyfive years. From these statements it will be seen that in rural areas the death rate is generally lower than that in towns, indicating that rural tracts are healthier than urban areas. This can be largely attributed to the open air life led by the people in the villages where little congestion of houses occurs and so the full benefits of sunlight and ventilation are obtained.

It has been recognised that in rural areas the chief obstacle to sanitary progress is the ignorance of the people about sanitary matters. The villagers do not understand sanitary principles and so view with suspicion any measures they are asked to adopt The habits and caste prejudices of the people also retard progress.

In order to get rid of the ignorance and prejudices of the people it is of the utmost importance to impart knowledge on health subjects and the prevention of epidemic disease by giving illustrated lectures and distributing leaflets describing these

2. The following steps have been taken by the Public Health Department:—

(1) Lectures in villages by Assistant Medical Officers in charge of epidemic dispensaries.

These dispensaries have been started mainly for the purpose of educating the people The duties of the officers in charge are both medical as well as sanitary with the idea that they may gain the confidence of the people and disseminate knowledge concerning health subjects. These dispensaries are under the Public Health Department and work directly under the Civil Surgeons. They tour throughout the districts and carry on health propaganda work by lecturing to the villagers on epidemic diseases and other health subjects and by exhibiting the various illustrated charts supplied from this office.

(2) The appointment of two Health Publicity Officers who give lectures with lantern demonstrations at all large gatherings, such as fairs, etc.

(3) A course of hygiene is included in the curriculum at the training schools for teachers.

(4) The issue of leaflets in vernacular to schoolmasters and others dealing with epidemic diseases.

During the late War all the officers that were sanctioned in pre-war days for the department were withdrawn and none of these appointments have since been filled in. Hence the department has been working with a limited staff consisting only of the Director of Public Health and the 29 Assistant Medical Officers on epidemic duty. Recently two Health Publicity Officers have been added to the staff. Propaganda work has recently been started and like education, is always a matter of slow progress, and it will probably take time before any visible effects in the improvement of the public health can be expected. The following steps have been taken to improve health condition in villages:—

(1) Improvement of water-supply in rural areas and also at places where fairs are held, and along the routes leading to them, and also in ryotwari villages
(2) The extension of the Village Sanitation Act to larger villages proceeds year by year.
(3) Travelling dispensary system as mentioned above.
(4) Vaccinators are trained in hygiene and epidemiology and so they are available for epidemic work in their circles when called upon.
(5) A Central Depot (Vaccine Institute) has been started at Nagpur where lymph for vaccination is prepared from carefully selected animals, purified and standardised by modern methods under skilled supervision and issued to the vaccinators in the whole Province.
(6) Medical inspection of schools by Assistant Medical Officers attached to epidemic dispensaries.

In order that the general health of the people may receive reasonable recognition it is necessary that it should be dealt with on adequate lines and the following represent the more urgent needs of the Public Health Department.

(1) Appointments of District Health Officers in large districts. In large districts the Civil Surgeon is in theory the Health Officer of the district. His duties

---

* Not printed.

LIEUT.-COL. H. G. STILES WEBB,

at headquarters, however, do not allow him to tour and inspect in the district to the extent that is necessary. The best and most hopeful method for promoting rural sanitation is the appointment of a whole time District Health Officer who would control and organise all the sanitary arrangements in the district.

(2) Increase in the number of epidemic dispensaries so as to provide one for each tahsil. The area over which the operations of each dispensary extend is much too big for one Assistant Medical Officer, and further expansion is therefore desirable.

In conclusion, the two most urgent needs for improving hygiene in rural areas would appear to be—

(1) The provision of District Health Officers.

(2) An increase in the number of travelling dispensaries.

Oral Evidence.

31900. *The Chairman*: Col. Stiles Webb, you are Officiating Director of Public Health in the Central Provinces?—Yes

31901. What is the significance of the term "officiating" there?—It is one of those things in India by which, although my predecessor has definitely retired from the service, I have got to officiate for two years and four months until he is officially extinct as far as India is concerned; it is under the orders of the Indian Government.

31902. Has it some association, remote or otherwise, with your salary during those two years?—Yes, it has considerably.

31903. You have provided the Commission with a note of the evidence which you wish to set before us. Would you like to make any statement at this stage?—There is one thing with regard to agriculture in this Province and that is the health of the agriculturists, in this Province their physique is exceedingly low and their height is small A fortnight ago one of the scientific papers published information regarding the relative heights in the various Provinces in India. If we can give the agriculturist of this Province good health, we may be able to do something towards agriculture. Physically and mentally he is a bit weak

31904. Would you give the Commission shortly an account of the organisation of your service in the Province?—The Public Health Department, I believe (I am speaking off-hand) was started in or about the year 1910 and they had then a complete staff or which became so very shortly afterwards, they had a Director of Public Health and an Assistant Director of Public Health in 1909, a Chief Plague Medical Officer from 1912 onwards and shortly afterwards they had an officer on special duty with regard to malaria. So there was more or less a complete staff. But since the War on account of financial stringency there has been only the Director of Public Health. We have no special officers working on any of the special diseases, or doing any research work, and this is the only Province in India in which such a state of things exists, where there is no laboratory where we can work out the various problems that confront us. The organisation itself is fairly complete, with the exception that we are understaffed, and we have this great handicap in not having a place where we can do any practical work to solve the various problems such as we meet in this Province. We have, for instance, leprosy, malaria, hookworm, tick typhus (which is prevalent in the Balaghat district and in the Saugor district). All these problems require elucidation; but there is not only no staff, but also no means of setting about the solving of the problems.

31905 I want to be quite clear about this question of facilities. Is it really the case that you have no laboratories here?—I have no laboratories at my disposal, none. There is a small laboratory attached to the Vaccine Institute which is for dealing with the purity of the vaccine lymph supplied, but beyond that there is nothing whatever; and we do no bacteriological work at all. The water samples of this Province have to be sent to Bombay, Calcutta or Agra and that means in the hot weather it is impossible to send the water down in time and so the required examination invariably goes wrong

31906. If you have a case of typhoid, have you any means to have the smear examined?—I have none at all. The proper way is to take the blood at a certain period of the disease for the actual cultivation of the organism and to put the serum up against a known strain of the organism concerned, but I have no means of doing either.

31907. To come now to your organisation in the districts: In the provincial memorandum entitled the *Memorandum on Rural Conditions and Agricultural Development in the Central Provinces and Berar*, paragraph 31, page 15, it is stated that 29 dispensaries have been started mainly for the purpose of educating the people. Who is in charge to-day of those dispensaries?—These dispensaries, now 30 in number, are in charge of what we call Assistant Medical Officers, equivalent to Sub-Assistant Surgeons in other Provinces and they work indirectly under me. The whole "organisation" is under me, but they work immediately under the Civil Surgeons in the districts to which they are posted.

31908. You say there are 30 now. These dispensaries are all peripatetic, are they?—They really are. What it amounts to really is the old plague staff camouflaged

31909. They represent the only medical organisation in the rural areas, I suppose?—We have two Health Publicity Officers who go about touring with magic lanterns and giving lectures. During the big fairs, Health and Baby weeks, and whenever they have an agricultural show, we generally send one down because a lot of people are collected there and he gives 3 or 4 lectures there.

31910. Have the local authorities any medical organisation at all?—No. There is no District Health Officer in any part of this Province; that is one of the things which is very necessary. The Civil Surgeon is supposed to be the District Health Officer in his district but it is impossible for him to do all the work

31911. In the event of an epidemic outbreak of a disease, what medical forces have you available for mobilisation in that particular district?—I send down one or two or three epidemic dispensaries if necessary and I invariably go myself. If the Civil Surgeon wants more help in the first place he applies to the Inspector-General of Civil Hospitals for it.

31912. Are you attempting to extend the knowledge and skill of your vaccinators?—Yes, we are not only training them but we are insisting on certain educational qualifications, and the men whom we train are generally not more than 20 or 22 years of age We are also teaching them epidemiology. There is a Vaccine Institute and last year we started training schoolmasters in the technique of vaccination and I think it is going to be a success. They can vaccinate within about 5 miles of their school and in one case I know a man earned Rs. 90 in three months.

31913. Can these vaccinators deal at all with a case of cholera?—No, they do things like permanganating the wells, but the actual treatment is done by the epidemic staff.

31914. They are the only people who are capable of giving the salt injection?—We hope they are capable, sometimes their treatment is rather empirical.

31915. On the question of malaria which you mentioned a moment or two ago, is there an organisation to deal with malaria in this Province?—No, there was a survey made in 1912; since then no work has been done regarding malaria. This year the Forest Department asked me for the services of an epidemic dispensary and I got Government to establish one. It is at present working in Melghat; we had also sent graduate for training in malariology at Sahranpur.

31916 As regards the distribution of quinine, I take it that you have any organisation?—Yes, it is done by Tahsildars and others.

31917. Are you satisfied with that?—Yes, as far as it goes. We spend about Rs. 50,000 a year in distributing the quinine to the people. It would however be very much better to carry out malaria surveys in certain selected areas, which might cost 2 or 3 lakhs, and in this way try to eradicate the disease. I am speaking from my experience in the Punjab and I think it would be money well spent.

31918. From your knowledge of the operations in the Punjab and from your acquaintance with the conditions in this Province, do you think that a campaign might be successful there?—Yes, in certain parts. I have been only 20 months in this Province. I think it might be difficult. I am thinking of the Melghat and other places; and I am going there next month to have a look and I anticipate something can be done locally quite easily and quite inexpensively.

31919. From the records at your disposal, do you regard the population of this Province as widely infected with malaria?—Yes, I should say it is. In the latest

map which was published by the Central Malarial Bureau they colour us very dark for malaria. The Melghat district and certain parts of Chhattisgarh and Raipur are the worst.

31920. Is any work being done on the hookworm disease in this Province?—There is a certain amount of work being done in the larger jails. Convicts are examined for the presence of the hookworm and a record is kept; the last record that I had made showed that 25 per cent of the jail population were affected with ankylostomiasis and 16 per cent with roundworm, which is very high The significance of the roundworm is a thing which is not generally recognised but itgives rise to some deaths; I have seen one or two cases. A certain number of people get affected with roundworm and it is not recognised till the case is on the operating table. There was a case of a boy recently in Raipur The Civil Surgeon examined him and kept the case under observation; he subsequently opened him up and removed 80 roundworms. I think it is a thing which we shall have to seriously take up in this Province.

31921. *Sir Henry Lawrence*: How does it come?—I think it is a good deal due to the water. It occurs in most of the water-supplies, say in the tank water-supplies of Raipur and Bhandara, or, where they take water from a river bed in which water melons are grown under heavy manuring; that is a great breeding place.

31922. *The Chairman* Is that a disease common to man and beast?—Probably the man is the intermediate host and the beast is the r al host.

31923. But it appears in man and beast in the same shape?—Yes.

31924. On that point, do you regard the interconnection between your Service and the Veterinary Service as important in its relation to public health?—Certainly, it is very important. I think I am right in saying that they are similarly situated to what I am having no pl ce for research work. I know a proposal was put up by them that we should have a joint laboratory, which I welcomed.

31925. Your think there might be a workable arrangement?—I think so, yes.

31926. You think the relation between the veterinary activities generally and the health of man has been sufficiently worked out in this country?—It has been worked at but what one knows of chiefly is tuberculosis. Though tuberculosis in cattle in this country is not anything like so prevalent as in England, still it does exist and it is one of the important things

31927. Is there a Rockefeller investigator at work on hookworm in this Province?—No; there is no work of any description being carried out in this Province.

31928. Still, in the provincial memorandum, paragraph 37, page 16, you say "Considerable sums have been spent by the various bodies concerned in the improvement of rural water-supply." You give there a list of the demands that have been made to improve the local water-supply and the money spent thereon. Has much been achieved by these efforts?—In the larger towns, yes: the amount that is spent on rural water-supply is very small; it is Rs. 10,000 this year for Berar.

31929. Do you think that the statistics of disease and death show an improvement as a result of the improvement in the water-supplies?—Yes, in some places; for instance in Damoh they have got a very decent water-supply.

31930. Have you worked out the expense of improving the drinking in water-supplies?—I should think that it would be next door to impossible, because many places in Berar it is not a question of improving it; it is the only water-supply. That is one of the problems there.

31931. Is it usually well or tank?—Nearly always well.

31932. Is not the construction of the well-head very important?—Yes.

31933. Is that a direction in which improvement might be done?—Yes; as a matter of fact that is being done, throughout the whole Province wherever possible.

31934. What is it costing?—I could not tell you off-hand

31935. Would you look that up and let us know?—I cannot tell you what is being spent.

31936. Have you any idea how much it costs in the case of the average villager to put his drinking water-supply into reasonably good order?—I could not tell you.

31937. Is there a great deal still to be done in the Province in improving well-heads?—Yes, particularly in rural areas. It is reported by the epidemiological staff hat such and such a well is not protected and we take steps in the matter.

31938. Are you within sight of achieving your aim, do you think?—I think so; a considerable improvement has been brought about especially during the last few years with regard to water-supplies.

31939. Do you think that the results are reassuring?—Yes. Take the infantile mortality which is the best thing to use as a guage for general sanitation During the last five years it has come down considerably below 200, whereas in any other preceding period of five years it has never fallen below that figure.

31940. *Sir Ganga Ram*: What is this figure of 200?—200 per thousand living.

31941. *Prof. Gangulee*: Do you disinfect wells in case of epidemics?—It depends on what the epidemic is. If we are up against cholera for instance, which is the main disease here, we use permanganate of potash, which is the cheapest and most easily obtainable disinfectant.

31942. Do you find any protests in the villages in using that water?—Not if you go yourself.

31943. *The Chairman*: I think you misunderstood the question I put you some moments ago as to whether research work was being done under the *aegis* of the Rockfeller Institute. I see here on page 411 of your note that you say that a special inquiry is being carried out in the Nagpur district by Dr. Chandler, the hookworm research worker?—That is rather with regard to the relation of the soil to disease. He sent two or three people down here who were working in that direction and then he came down himself to see the results. I met him at Jubbulpore and we found that the hookworm ova do not thrive in certain soils, particularly the black cotton soil, in this Province. That was the nature of the inquiry

31944. Is this inquiry still being carried on?—No, at present nothing is being done

31945. Would you turn to page 412 of your note?—You say: "It has been recognised that in rural areas the chief obstacle to sanitary progress is the ignorance of the people about sanitary matters." If you were asked for the ideal facilities for latrines for a village, what would be your advice?—The ideal is a water carriage system, which of course is out of the question

31946. But within the region of practical politics, what would be the system?—I think the system which they should utilise should be the one which is in practice in some parts of the North-West Province where they have got to go a certain distance from the town and not go all over the place.

31947. Do they dig a trench?—I think the sun generally does what is necessary.

31948. It is an important point, is it not? For instance, the infection in hookworm is conveyed directly from waste products to the foot, and supposing you do have a place set apart for that purpose, unless you have a trench you are still going to get the infection, are you not?—Yes, that possibility is incurred, but how are you going to enforce it? You can only give them a lecture on hookworm and make certain suggestions.

31949. I only wanted to discover what your ideal was?—As I said, the water carriage system is my ideal.

31950. You say, provided the sun is allowed to get at the night-soil it is more or less disinfected and sterilized? Is that the case in hookworm?—Yes, provided they do not get into the soil. As I say, the black cotton soil is not a suitable soil for them to develop in.

31951. Are you using the primary school system in this Province to teach health rules?—Yes, lectures are given in primary schools on hygiene, and there are primers.

31952. Have you yourself seen these primers or attended these lectures?—They are all in the vernacular.

31953. Have you had them translated or seen the primers yourself?—Not the actual primer; but we have issued a primer ourselves, which is widely distributed.

31954. One gets the impression that the population are capable of being taught these matters; for instance, they now understand the business of dealing with plague conditions. They are ready to leave the towns and camp out at a moment's notice?—Yes, at certain times of the year.

31955. No doubt in the rains it is not done quite so easily. But they are no doubt capable of being taught, are they not?—Certainly.

31956. Would you like to see a Public Health Act passed for this Province?—Yes, I think I should. But the most important thing at present from our point of view is the question of getting some sort of a Registration Act. The only data that we have got to go on to see that we are doing any good are the vital statistics, and vital statistics gathered from present means of registration of vital occurrences is a very difficult business. The Act of 1886 was purely a voluntary Act which I do not think was really very sound, because each Province was allowed to work it as they liked. There should in my opinion be uniformity for the whole of British India and then we should be able to correlate results with those of other Provinces and see how things are progressing.

31957. Have you considered as to whether there should be an All-India Health Act or whether it is to be done Province by Province?—I think it ought to be an All-India Health Act I am speaking of British India of course.

31958. *Prof Gangulee*. Your idea is to get uniformity of results?—Yes. For instance, the infantile mortality of this Province is higher than that of any other Province, but the conditions here are much the same as in certain other Provinces and yet we have a higher infantile mortality. Something might be done in that direction to see why the figures vary in two Provinces where the conditions are about the same.

31959 *The Chairman* Have you studied the problem of rural health as it is affected by nutrition?—I do not know much about deficiency diseases and I have not really studied the dietary of this Province; and any evidence that I might offer is hardly worth recording.

31960. Have you had time yet to form any view as to whether there is any correlation between the diet of particular districts and the physique and health in those districts as compared with others?—No, I should not care to hazard an opinion.

31961. *Mr. Calvert*: The Punjab diet and the Central Provinces diet are not quite the same?—You have only got to look at the people of the Punjab; they are bigger made, and weigh more. Their diet is of a different quality.

31962. *The Chairman*: But you have got different races?—Yes Look at the Chhattisgarhi Gond people who are very much bigger and heavier than the people of any other part of this Province, and so far as I can see the diet is rather the same.

31963. Do you think the Chhattisgarh men are better nourished?—Yes.

31964. And they are a rice eating population, are they not?—Yes.

31965. *Sir Henry Lawrence*: Are they better nourished than the Berars?—Yes, the Chhattisgarhi Gond is more equivalent to the Gurkha; he is a big thick-set fellow.

31966. *The Chairman* After all race remains a very important thing. You may feed a thoroughbred forever, but you cannot build it into a Clydesdale, can you?—No.

31967. *Sir Henry Lawrence*: Did I understand you to say that you deprecated expenditure on quinine? You would prefer something to attack the causes of malaria?—Yes. It seems to me that if we could spend two or three lakhs to clear up malaria in one or two of our worst areas it would be a better way of spending money than by allotting Rs. 50,000 a year in what I consider to be a haphazard way where you are really not touching the cause of the disease and you are certainly not eradicating it.

31968. Do you find support for that view amongst other authorities in public health?—Yes. At the Research Workers' Conference in Calcutta, which I had the

privilege of attending, that was one of the things that were taken up, the creation of an All-India Malaria Bureau, and thereby really trying to do some organised work in the whole of India. I applied here for the institution of a Malaria Bureau.

31969. Would you stop the distribution of quinine to school children?—If you mean for prophylactic purposes, then I am not at all a believer in prophylactical quinine. In my opinion, it only tends to mask infection and you carry the germ with you and infect other perfectly healthy people.

31970. Was any resolution passed at this meeting of research workers to which you have referred?—Yes A resolution was passed that there should be some central organisation, and they are going to start it at a place called Karnal in the Punjab, where they have a laboratory.

31971. Could you refer us to the record of that discussion?—No, because it has not been published yet. That was one of the resolutions, but I have not got any copy of it.

31972. But it will be published?—Yes. I have not received a copy.

31973. *Prof. Gangulee*: When was the conference held?—From the 13th to the 16th of December 1926, at Calcutta.

31974. *Sir Henry Lawrence*: Do you make any use of the population collected in jails for teaching simple hygiene?—Yes. We give lectures in the central jails. I think the Health Publicity Officers go down and give lectures, and they appreciate them apparently.

31975. Do you suppose that any considerable proportion of the jail population are enlightened in this way?—I should hardly like to express an opinion. I do not know whether in this Province they go from jail to jail, but I rather fancy that most of the men in the jails are habituals, and no sooner are they sent out than they are in again. It is rather difficult to say.

31976. Are these lectures given in every jail or only in the central jails?—It has been done in the central jails in Nagpur and Jubbulpore, I do not think it has been done in Raipur It was done as an experiment last year.

31977. It is only just started?—Yes.

31978. Do the jail authorities welcome this movement?—Yes

31979. It might be a very important medium for the enlightenment of the population?—It certainly would be an accessory, but not so much, I think, in central jails as in the district jails.

31980 Has that been touched?—Not yet. There are difficulties in lecturing in a jail I do not know whether they allow all the criminals to come together, the males and females, etc. It has been done in the central jail. We have tried it with a magic antern, and they like that.

31981. So far, it has only been done with a very small percentage of the jail population?—Yes.

31982. What is your jail population in this Province?—I could not tell you most of the jails are mostly empty. I think only 50 per cent of the accommodation is utilised.

31983. If you take all India, I gather that there are about 700,000 inmates of jails. The Public Health Department could make full use of that material?—If you take the North-West Frontier Province, I can guarantee you a full house; all the jails there are over flowing

31984 Has this experiment been tried in other Provinces?—I do not know.

31985. Would you recommend that it should be done?—I think it might be done.

31986. *Sir Ganga Ram*: Is there much leprosy in this Province?—I should say that this Province has more leprosy that any other part of India.

31987. What measures do you take to prevent the spread of leprosy? Have you any special institutions here to keep them?—Yes, there are eight institutions at the

present moment (I like the word institution and not asylum) which are run by Missionaries. We are going to open leprosy dispensaries at five of the biggest towns where leprosy is prevalent, for instance in Raipur, Amraoti and such places.

31988. Are you of opinion that it spreads by the touch? Some doctors are not of that opinion?—It spreads by intimate personal contact. Beyond that I cannot tell you; it is unknown yet how the disease is actually transmitted.

31989 Three years ago, during Lord Reading's time, there was a large collection of funds to combat leprosy. What share of that fund did you get?—We collected for that fund a very large amount, namely, over Rs. 2 lakhs. That money has gone to Delhi to the Viceroy's Endowment Fund, but up to the present time we have not got anything.

31990. Are you aware what they are doing in that respect?—They are spending money on getting another research worker and on propaganda work, and they are paying for the training of medical personnel in the treatment of leprosy. Last year there were 15 medical men from the whole of India trained for treatment of leprosy. 7 or 8 went from this Province, and since then 4 have been trained from my department and 4 have been sent by the Inspector-General of Civil Hospitals; we are also sending 5 men next month to Dr Muir in Calcutta for training.

31991 Is the treatment of leprosy that you give that of Dr. Rogers?—It is the Hydro-carpus oil-cum-creosote treatment.

31992. Is that the final treatment which has been fixed upon?—That is what we propose to utilise in this Province. We have not got facilities for trying a lot of treatments, such as the treatment by the modified tuberculin of Dr Row of Bombay. There is another treatment, namely, what is known as Hg 53 It is a preparation of mercury and arsenic, and the idea is that it will simultaneously cure syphilis which is prevalent among lepers, because until you combat the syphilis in the leper you can make very little impression on his leprosy. This drug will tackle the two at the same time.

31993. In this Province, you do not allow the lepers to spread about and to go on begging and spread the infection? Are they restricted in any way?—The Leper Act can be applied in any district in which the Deputy Commissioner asks for it to be applied. Personally, I am very much against compulsion because by compulsion we shall defeat our own object. Another thing is that most of the begging lepers are not infective. They do not spread the disease, they simply linger on It is the man who does not know that he has got leprosy that is the real source of infection It is in the primary and secondary stages that leprosy is infective They found a man in Calcutta who was preparing sweets who was suffering from leprosy, he would be likely to spread the infection, because he did not know that he had leprosy.

31994. *Sir Henry Lawrence*: Can you suggest what is the leper population of the Province?—I think it is 10,000.

31995. The Census Report says that it is about 13,000?—Yes. I think we have 7,000 in institutions. That is rather a floating figure, because they come and go; there is no compulsion.

31996 *Sir Ganga Ram*: Are not these Missionary institutions helped by the central endowment fund?—Yes This Government has been paying a subsidy. Now it is a capitation grant for the food and the upkeep of the lepers. We also give them very large grants for new buildings and any sanitary measures like new wells and water-supply. It does not, for some reason or other, come through my department, although I handle a good deal of it because it is an epidemic disease.

31997. You have not got any leper settlements where the inmates can be trained in agriculture?—No, but there is a suggestion to take a place a few miles from Raipur and put up a Government institution there, but I think we shall have to wait a bit till we get more in touch with them, possibly by means of out-patients at the special leprosy dispensaries.

31998. You say that money should be spent on eradicating malaria?—I think so.

31999. Do you mean according to the Ross system?—Every problem has its own solution. In some places, it may be better to tackle the mosquito and in others to tackle the reservoir of the disease.

LIEUT.-COL. H. G. STILES WEBB.

32000. Do you have a reliable system of registration of births and deaths?—I should say that it is exceedingly bad. It is done by people who get no extra pay for doing it, and consequently they do not care very much about it.

32001. There is no penalty attached to it?—No. There are sanitary byelaws but they are very rarely enforced.

32002. There is no means of preparing vaccines and making cultures in the laboratory here?—The only laboratory that I have is the Central Provinces Vaccine Institute, where we manufacture lymph for treating small-pox.

32003. You cannot make cultures for examination?—I have no laboratory staff.

32004. The Medical Department have one?—There is a laboratory attached to the Mayo Hospital in charge of an Assistant Medical Officer, at the present moment.

32005. Can you not get the work done there?—It does not come to me. They do not apply to me as they might, and as they do in other Provinces.

32006. You say that you allow vaccination to be done by schoolmasters. Is it safe?—Yes.

32007. You think they do not commit any mistakes?—All these men, before we allow them to vaccinate, are trained for six months in the Vaccine Institute; they also train them in epidemiology. They are examined at the conclusion of the course.

32008. You allow them some fee?—I think it is 3 annas, but that is not my province.

32009 It is the recognised fee?—They have fixed this amount themselves as far as I know. I do not know whether the Education Department has fixed it. I am only told that is the fee.

32010. Do you not think that water diseases occur more in paddy growing areas?—Are you speaking of malaria and cholera?

32011. All sorts of diseases, roundworm, hookworm, etc.?—The more the water the greater the probability of water-borne diseases, particularly cholera.

32012. Do you see that some text-books are introduced into schools for hygiene?—There is merely a sort of little series of lectures on just the elementary things.

32013. Do they not consult as to what is being done in other Provinces in these matters?—I suppose they do.

32014. Is it not part of your duty to see to these hygiene lectures?—They generally apply to me, and we just draft them out for them. You asked a question about consulting other Provinces That is one of the things from the absence of which the whole of the Public Health Departments of India are suffering In 1913 they commenced holding what were known as Sanitary Conferences where the Directors of Public Health and other Sanitarians and Epidemiologists used to meet and discuss problems and exchange views, but there is no such thing now

32015. *Prof. Gangulee*: Has it been discontinued?—Yes. It is very important that there should be such an All-India conference.

32016. *Sir Ganga Ram*: Is there not a weekly or monthly Government publication in which the results of researches into medical science and hygiene are reported and which reports as to what is done in the various Provinces?—Not in any one Province.

32017. Is there not an All-India publication?—There is the Indian Research Association and they publish their journal about 3 or 4 times a year, but that is devoted to research work and not to public health work. Of course the one is a corollary to the other to a certain extent, but public health work is somewhat different Unless we meet together and know what the other people are thinking and doing, we are much handicapped and at present we have no such opportunity. For instance, with regard to plague measures, we wanted to know what is considered to be the standard of rat destruction in other Provinces. We held a meeting in Calcutta to talk over these things, but you cannot discuss a big subject, like plague, in two hours.

32018. Is there a public health journal for the whole of India?—There is none now.

32019. Would you recommend something of that sort?—I think it would be a very good thing.

32020. What part of the Punjab were you in?—I was Deputy Sanitary Commissioner at Lahore, and afterwards Chief Malaria Medical Officer.

32021. *Sir Thomas Middleton*: From the figures * you have given us it would seem that fevers are much worse in rural than in urban areas?—Yes.

32022. In the last seven years the death rate in rural areas was something like 20 per thousand while in the towns it was about 13 per thousand?—Yes.

32022. I suppose diagnosis in the towns is much better than in rural areas?—The facilities for diagnosis are better.

32024. Is not the work better done in the towns than in rural districts?—Possibly, because in some parts of the Province there are people who have never even heard of modern methods of treatment and who continue to use their own remedies. With regard to malaria in urban and rural areas, if you work in a malarious district you will find all round the town the population has a greater splenic and parasitic index but as you get towards the centre of the town you will find it considerably diminished. That is perhaps the answer to your question.

32025. That explains why the percentage of deaths in rural areas is much higher than in urban areas?—That is possibly the explanation, yes.

32026. What I want to get from you is whether the figures 20 and 13 represent the kind of figures you would expect from your general experience, or whether there is a large margin of error?—There is a very large margin of error.

32027. In looking at any of these figures we must expect a large margin of error?—Yes. The very first day I came to this Province I saw a Hindi word put down as the cause of a certain number of deaths, and on inquiring what it was, I was told it was worms. I did not think of the significance of it at the time, but that was possibly roundworm. Deaths are commonly attributed to worms in certain parts of this Province.

32028. I took fevers as an example, because that is a case where there is a wide difference in mortality as between town and country, and I wanted to ascertain whether these figures represented some real difference or whether they were due to errors in the classification of disease. Your view is that they represent a real difference?—Yes.

32029. You have commented on the physique of the people in the Chhattisgarh Division and in the Berar districts, and I think your view is that the former are stronger and healthier than the latter?—They are more strongly built, certainly.

32030. Can you tell us about any other Divisions of the Province, such as the wheat-growing tracts in the north?—I am afraid I have not been here long enough to give an opinion. As far as I can see, the Chhattisgarh people have the best physique, but I am not prepared to say they have less disease

32031. *Dr. Hyder*: In reply to a question by the Chairman, you said you had no facilities for investigation?—Yes.

32032. Have you any facilities for the prevention of disease?—One is a corollary of the other; you cannot prevent disease until you have discovered the cause.

32033. Have you any facilities for the education of the people generally?—Yes, we have Health Publicity Officers who go round and attend all fairs, shows, etc., and give magic-lantern lectures which are very popular. We also do work in the schools.

---

*Statement showing deaths from different causes and births during 1901 to 1925 in (1) the rural districts and (2) in the towns of the Central Provinces and Bersr—Not printed.

32034. Would you like to have a Public Health Research Institute for the Central Provinces?—I rather deprecate the word "research". I want a Public Health Institute in which we can make preliminary investigations, the research itself being conducted by a central body. There is no need for a multiplicity of research institutes in India, for one thing, we have not the staff. There should, however, be some institute where preliminary investigations could be made, and then the results would be put up to the central body which would go ahead and work on them if it thought fit.

32035. What is the total population entrusted to your care?—14½ millions.

32036. Do you know the kind of work that is being carried out on malaria in the Federated Malay States?—I have heard of it.

32037. They do not have to look after more than 1½ million people, but they possess all these facilities for the investigation of disease and its prevention and cure, and also for educational work. You have nothing of that kind here?—We have nothing like that in this Province, but the problem in India is different, political factors have to be taken into consideration, especially in this Province.

32038. Is there any arrangement for interchange of ideas and associated effort between the Medical Department, the Public Works Department, the Engineering Branch of the Railways, the Irrigation Department and so on in this Province?—Yes. In the Public Health Report for the year we embody the work where we overlap. There is no Sanitary Engineer in this Province, and we need one. In the Public Health Department of the United Provinces there is a staff of Sanitary Engineers working under the Director of Public Health.

32039. Have you any say in the matter of irrigation reservoirs in this Province?—No If they were undertaking extensive irrigation works, I should go and see that what was being done was all right from the health point of view. If an area is properly irrigated the e may be, as in the case of the Montgomery district in the Punjab, less malaria than before.

32040 Have you any arrangements for ascertaining the spleen index of school children?—It used to be done, but it has fallen into abeyance in this Province for lack of staff. I have personally made a few investigations, but I have not sufficient data on which to found an opinion. There is no doubt that in certain parts of the Province the prevalence of big spleens amougst the children is more noticeable than in others.

32041. *Mr. Wills*: Have you ever heard of any increase in malaria in Chhattisgarh as a result of irrigation?—No.

32042. Or of any increase in any other disease?—No.

32043. You were not here in 1918, but do you happen to know the mortality figures from influenza in that year?—I think the mortality was something like 1 in 10; 105 per thousand. It was, as usual, greater than in any other Province. Only in one year were we beaten in that respect, and that was in 1917, when the Punjab had the highest infantile mortality rate in the whole of India. We have been first, unfortunately, ever since. The percentage of children dying in the first year of infancy has been and is higher here, than in any other Province, except during 1917.

32044. *The Raja of Parlakimedi*: What are the most virulent diseases in this Province?—As far as the rural population is concerned, cholera, plague, malaria and (in certain parts only) leprosy. Tuberculosis is undoubtedly spreading in this Province also.

32045. *Prof. Gangulee*: What about venereal diseases?—I am told they are very rife in Chhattisgarh and the eastern parts of the Province, and Missionaries at Mungali are making a special effort to deal with it. The Red Cross gave them a grant to buy salvarsan last year, and I am trying to get them a grant this year.

32046. *The Raja of Parlakimedi*: Which of the diseases you have mentioned is the most troublesome?—It varies from year to year. Last year we had a good deal of cholera in the eastern part of the Province, and this year plague has been troublesome, and also small-pox in Berar, where the people will not be vaccinated. It may be the people do not object so much to vaccination as to the vaccinators; I cannot say. The personal factor has always to be considered in India.

LIEUT.-COL. H. G. STILES WEBB.

32047. I suppose these diseases depend largely on the season?—Yes, on the season, the climate and the rainfall.

32048. With regard to the appointment of Health Officers, application has first to be received from the District or Local Board?—There are only three Health Officers in the whole of the Province at the present time: at Jubbulpore, Nagpur and Amraoti. There are no District Health Officers in any part of the Province.

32049. You have not received any applications from Local Boards?—No.

32050. Were the three officers you mention appointed by Government?—The appointment is left to local bodies, but the final say in the matter is with the Director of Public Health. Naturally, as far as is advisable, I let them have their choice, because they pay half his salary (Government pays the other half) and they may prefer one man to another.

32051. What is the extent of the jurisdiction of these three officers?—Only within the boundaries of their Municipalities At one time I thought that, as Government paid half their salaries, they might be utilised in the districts; but I think the Municipalities might object. They have enough work to do in cleaning up places like Nagpur in any case.

32052. Have these Municipalities Sanitary Engineers?—They generally have men called Municipal Engineers, but I would not care to call them Sanitarians.

32053. Have any of them Sanitary Inspectors?—Yes. They are all trained in Bombay, and Government pays half their salaries.

32054. How many are they in number?—All the big towns practically have a Sanitary Inspector or two. There must be about 50 employed in the whole Province.

32055. Who supervises their work?—The Health Officer if he is there and the Civil Surgeon if there is no Health Officer.

32056. Is it at fixed periods, say, so many times per year?—He is supposed to supervise all the year round. The Sanitary Inspector works direct under the Health Officer.

32057. What are the things he is supposed to look after?—The Sanitary Inspector sees that the sanitary staff does its work properly, the removal of refuse excreta and such like things.

32058. Does he also see that the water sources are not contaminated and all that kind of work?—Yes.

32059. What attention does baby welfare receive in this Province?—We publish an account of all the Baby weeks, what they do and all the rest of it and this year we are making a special effort in dealing with it; only at present the control has been vested in a special committee of the Red Cross, although the grant is passed through my budget and I think they will be able to deal with it better in some ways I am a sort of liaison officer between the general committee of the Red Cross and the Public Health Department and I am also a co-opted member on the special committee. There again you have got to leave a certain amount of latitude to local authorities in the matter of the way of conducting of their campaign.

32060. Do many Municipalities take interest in such things?—We had been rather badly handicapped by what is known as the Sim formula. Under this formula $\frac{3}{8}$ths of the amount is to be spent in the Central Provinces and $\frac{5}{8}$ th in Berar. So unless you can get Berar to spend $\frac{3}{8}$ths you cannot get anything for the Central Provinces.

32061. *The Chairman*: Who was Mr. Sim?—Mr. Sim, of the Government of India, who has now joined Vickers. You cannot run disease according to formulae.

32062. *The Raja of Parlakimedi*: How many lady doctors are there in this Province?—You are taking me out of my department. I think there are about four or so who work practically on infantile mortality.

32063. Do each of these Local Boards and District Boards possess one?—No.

32064. Not even one of them?—Some of them have. There are 4 or 5 throughout the Province First of all you cannot get them. The female Assistant Medical Officer is exceedingly rare, you must remember the standard of education among women.

32065. So the treatment of women is practically ignored here?—No. Now there is a movement to establish female hospitals and it will do a tremendous lot of good, particularly in regard to infantile mortality, because you are not going to get much beneficial result from first starting welfare centres, washing babies and bribing *dais* to come and listen to lectures Where you have maternal disease as the main cause of infantile mortality you are not going to deal with that except through the foundation of women's hospitals.

32066 Where are these hospitals going to be built?- One is going to be built at Chhindwara. Of course there are female hospitals under the Dufferin Fund in all the big cities.

32067 How many such hospitals are there in this Province?—I think there are 3 or 4 in this Province.

32068. In this women's hospital which you are going to have, are there going to be so many beds allotted for in-patients?—Yes

32069. It is entirely for women?—Yes; it will be for female cases only.

32070. *Prof. Gangulee*: You do not get any help from the All-India Research Association?—No, because we are doing nothing; but if we could show that we wish to carry out some research then they could give us some assistance

32071 What is your existing organisation for collecting vital statistics?—They are collected by the sanitary staff and by various other persons, the *patwaris*, the police and others. The Municipality keeps its own register and the police keep their own register and when either or both are doing nothing for a little time, they come together, compare notes and produce the register. The idea was that one should check the other. The system is defective and I think there should be a special trained staff through the whole of India and that it should work directly under the Public Health Department.

32072. Turning to the question of the malarial survey, what was the nature of the survey that you referred to?—It was a general survey conducted by Major Kendrick, on topographical lines.

32073. What are the qualifications of the Assistant Medical Officers?—The Assistant Medical Officers of this Province are trained at the Robertson Medical School and are examined by certain of us and by some outside examiners and we do the best we can for them. But the real difficulty is that the standard of education that these men have before they attempt to tackle medicine is so small and so low, that they cannot assimilate the things they are taught If I ask an ordinary question about the prevention of plague they take a long breath and say it is caused by this and that but they do not understand it and so they cannot apply it.

32074. They do not have adequate scientific education?—It is only a four years' course and the facilities are not many.

32075. What is the pay of the Assistant Medical Officers?—They start on Rs. 60 now and there is an agitation to start them on Rs. 100. At one time it used to be Rs. 20 and our Sub-Assistant Surgeon was getting Rs. 20 to look after the health of a regiment.

32076. You have got an Act called the Village Sanitation Act; when was that passed?—I could not tell you.

32077. Would you tell us the scope of that Act?—It is like a little panchayat they sit round and talk about things and they may also invite the Deputy Commissioner. I think, as a rule, they do some good.

32078. Not very effective?—No; but taking all things into consideration, I do not think they are at all bad.

32079. In matters of rural sanitation, what is the attitude of the District Councils?—It is very difficult to say, sometimes they are hampered by financial stringency

32080. Not lack of interest?—That is the excuse that is given.

32081. Is there any District Council in this Province taking any definite step for the improvement of rural sanitary conditions?—No. I cannot think of any special one.

32082. Financial stringency is almost universal?—Yes.

32083. We are told in another Province that irrigation is occasionally responsible for malaria. We should like to have your views on the point, whether you associate malaria with irrigation?—If the irrigation is done properly I think it is certainly not harmful as regards malaria, it may be rather beneficial But in this Province irrigation is in its infancy and I am certainly not in a position to give an opinion as far as this Province is concerned.

32084. I think we have here four tracts, the wheat tract, the cotton tract, the rice tract and so on. Do you find that the sanitary conditions vary in the different tracts?—No, I do not think so.

32085. You do not find that in the cotton tract of Berar, which we are told is rather prosperous the sanitary conditions are better than in the other poorer tracts?—I should say they are comparatively worse because it is very difficult to deal with the Beraris. The District Council will tell you that this is owing to lack of funds.

32086. You have said you have eight institutions for dealing with leprosy, all run by Missionaries?—Yes.

32087. To what extent does the Indian public support these institutions?—The Missionaries get a lot of money from England and America; and the Government subsidises them.

32088. What about the Indian public?—The Indian public in this Province subscribed over two lakhs recently to the Viceroy's Endowment Fund.

32089. Is there any leper institution entirely run by Indians, other than those that are run by the Missionaries?—No, there is none.

32090 About your propaganda work, do I understand that you are utilising the Education Department as much as you would like to?—Yes, certainly, we work hand in hand with them in many things.

32091. And with the Co-operative Department?—I do not know that I can say that exactly

32092. You have not utilised that agency for propaganda work?—Where there is a big gathering, there we send down our men to lecture.

32093. In your note you tell us that this question of having a research institute here is before the Government. Is it in the form of a definite proposal? - I put it down definitely under every heading that I could, giving reasons as shortly and as strongly as I could, and it has been turned down owing to lack of funds

32094. When was this proposal first made?—Before I came to this Province, there is a sort of Medical Administration and Finance Board which first considers these things before they go to the Legislative Council

32095. The proposal did not go as far as the Legislative Council?—No, it did not go to the Legislative Council. I have spoken to one of the Ministers here and he is very sympathetic towards the proposal. But this time it is entirely a question of funds. I am told we have lost a lot of money, over 25 lakhs, through excise. The initial cost of a Public Health Institute was estimated at 3½ lakhs.

32096. Do you combine the Veterinary Institute in that?—It could be done.

32097. *Mr. Calvert*. You used the word 'eradication' with reference to malaria. Do you mean complete eradication?—Yes; if they can do it in places like Panama and other places, why can we not do it in India?

32098. They are tiny little places; India is a Continent?—If it can be done in one place it can be done in any other place, provided you have legislation to back you up.

32099. You think it could be done on a sufficiently large scale to be really valuable?—Certainly, because the work should be permanent.

32100. It would not prove too costly?—I do not think so, if it is done by a man who knows his job.

32101. You mentioned that Civil Surgeons are Health Officers; are they also in charge of the local jails?—Not always In the central jails there is a separate officer, the Superintendent is a separate officer.

32102. They are in charge of the district jails?—Yes.

32103. Are you satisfied with the present division of funds between the preventive and the curable diseases?—No; I am not. You cannot do prevention work on an area of 100,000 square miles with an Officiating Director and two Publicity Officers.

32104. Is there much scope in this Province for rural sanitary engineering?—Yes.

32105. It could be done by a Provincial Sanitary Engineer?—A Sanitary Engineer is one of the most necessary requisites in public health. You may be a very clever engineer but you are not necessarily a sanitary engineer; that is a specialised job and I consider it is most essential, especially with regard to water-supply.

32106. *Sir Henry Lawrence*: Your total budget expenditure is about Rs. 4,50,000? Of this, how much do you spend on quinine?—I think it has gone up to Rs. 48,000 or Rs. 50,000.

32107. How much is spent on the Medical Department?—I could not tell you. The estimate in the United Provinces is Rs 47,00,000 or Rs. 49,00,000.

32108. In other major Provinces they spend from twenty to forty lakhs on public health?—I think my budget this year will be something under four lakhs.

32109. You are being retrenched, are you not?—I put up for a malaria bureau and as that will be cut out, the amount will come to about four lakhs.

32110. Your medical budget is about 14 lakhs this year. Would you like to reverse those figures?—Personally, of course, I would; we could then do very much more work than we are doing now.

32111. *Sir Ganga Ram*: Is tuberculosis on the increase in this Province?—I have not made any special investigations in this Province but from what I heard at the Indian Science Congress at Lahore and from the investigation that I made in the North-West Frontier Province, I have gained the impression that tuberculosis is increasing throughout India.

32112. Have you any special hill stations here for that?—There is a so-called tuberculosis sanitorium at Pendra which is run by a missionary doctor but I do not myself think that they do any special anti-tuberculosis work. I think it is simply a name to cover other activities of theirs.

32113. Do you not think that sometimes ordinary fevers are mixed up with tuberculosis?—Yes, that is so.

32114. Have you got any public health museum here?—No.

32115. Would it not be a good thing to have a public health museum located at Nagpur?—I think that would be a sound thing. Personally I think it would give a great deal of assistance in that direction. But I suppose you are thinking more of the education of students. We might of course have some health exhibits attached to the local college here. But this is an expensive business.

32116. *Sir Henry Lawrence*: Have you a Medical College here?—Yes, the Robertson Medical School.

32117. Up to what standard do they teach?—Up to the Sub-Assistant Surgeon standard. There is an agitation now to try and get the graduates' degree, but I am afraid I should hesitate to say that we have facilities for the necessary clinical material.

32118. The superior officers are recruited from elsewhere?—Yes, the posts are all advertised, and they come before a certain Medical Advisory Board of which I am a member.

32119. *The Chairman*: Has this medical school no laboratory facilities?—I suppose they have a certain amount of facilities, but from my point of view a public health laboratory and an ordinary laboratory are two different things. For instance, in the examination of water I look at the question from a different point of view to that which the bacteriologist would take.

32120. *Sir Henry Lawrence*: Does your local Council recognise the importance of spending money on public health?—I hope they will.

32121. Do you think you could get them to spend more money?—I am afraid I could not answer that question, but I think we will try to stir them up.

32122. *Sir Ganga Ram*: Are there any Salvation Army institutions in this Province?—I do not know. There have been Salvation Army people knocking about here, because one of them came to me and I gave him Rs. 15 the other day. But I am afraid that was for work in Madras.

(The witness withdrew.)

Lieut.-Col. H. G. Stiles Webb.

Mr. SHYAM SUNDAR BHARGAVA, Managing Proprietor, Messrs. Chandrabhan Behari Lall, Jubbulpore.

Replies to the Questionnaire

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) So far in this Province selected seed and some improved implements only have influenced and improved the cultivation.

(*b*) Yes, in my opinion, field demonstrations ought to be carried on more freely free of cost for the first year in each village or group of villages and some sort of gathering should be arranged both at the time of demonstration and when results can be shown.

(*c*) Same as (*b*).

QUESTION 4.—ADMINISTRATION —(*a*) Yes. Government of India should in each Province send their experts to study local conditions and their experts should be made more familiar with local conditions.

(*b*) Yes; for instance, if Central experts under Government of India make experiments and succeed in devising or selecting a threshing machine which would suit Indian conditions, Local Governments would not be required to do the same thing in their respective Provinces. The same thing may be said about all such improvements which are common such as improved furnaces for boiling sugarcane juice, method of cultivation of common crops like wheat.

(*c*) (i) The Agricultural Services are fair, but Veterinary Service should be more under the control of Agicultural Department so that they may be more useful to agriculturists. Moreover their training should also fit them to use simpler methods and medicines so that they can be of more use to village people.

(iii) ROADS.—These need great improvement and extension.

(iv) Satisfactory although common village people do not avail themselves of this department's activities

(v) Fair

(vi) Fair.

QUESTION 5.—FINANCE.—(*a*) Better financing of agricultural operations is urgently needed and some special banks known as Agricultural Banks should be started and these must in beginning be encouraged and helped like co-operative banks. Moreover Government should give more freely loans for these purposes.

(*b*) *Taccavi* loans have become very unpopular and in my opinion if advisory committees are appointed in each district or tahsil to advise at the time of giving and realising the *taccavi* it would become more popular.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The main causes of borrowing are :—

(1) To meet the expenses required to meet all the agricultural operations, especially to buy bullocks.
(2) Marriages and other ceremonies.
(3) Purchases of land at times at very high price.

(ii) The sources of credit are generally the malguzar and village *sowcar*.

(iii) The reasons for non-repayments are :—

(1) Failure of crop.
(2) As the savings are usually so low that even in ordinary years they hardly maintain their family and when loans are taken for unproductive purposes it becomes very difficult to pay back.

(*b*) In my opinion, better facility to get loan and redemption of mortgage bonds will be enough, but as in places rates of interest are too high the Usurious Loans Act should also be applied.

(*c*) I think the other way; usually mortgage loans are cheaper in interest and therefore are more freely paid back and therefore I advocate right of mortgage and sale on all land held by tenant for a long term or with the permission of landlords.

MR. SHYAM SUNDAR BHARGAVA.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) Sub-divisions of holdings are great, but I cannot suggest any means by which to stop them.

(*b*) In my opinion, revenue officers should have instructions and power to force consolidation when so desired by exchanging land.

(*c*) I do not think this can be done.

QUESTION 8.—IRRIGATION.—(*a*) I suggest for all districts in the wheat and rice tracts of the Central Provinces extending the irrigation schemes of (i) and (ii) type, *i.e*, perennial and non-perennial canals and tanks.

None but slackness on the part of Government to sanction new schemes.

(*b*) I have as yet not heard of these difficulties in my district.

QUESTION 9.—SOILS —(*b*) In my district a system known as *bhandhwas* is in general vogue and its effects are very striking.

It shows marked improvement for quite a number of years and then, say, after 30 years or more, shows signs of deterioration.

(*c*) By ploughing it deep enough to up-root all *kans* and make it possible for cultivation. To this end the Agricultural Department tried motor tractors, but failed; and then the department got a steam tackle which, if it proves successful, will be able to do a lot to reclaim enormous areas in Jubbulpore, Damoh, Saugor, etc. Also Government should treat these ploughing and *bunding* operations as improvements for the purposes of *sanads*. This will induce the cultivators to get this sort of work done at any time irrespective of settlement periods.

QUESTION 10.—FERTILISERS —(*a*) Yes, great use ought to be made of natural manures and rural population should be compelled to make necessary pits round the villages to throw cowdung and rubbish and also to utilise urine as manure, this will considerably improve the quality and increase the quantity of natural manure in each village.

(*b*) No.

(*c*) By free demonstration on cultivators' fields.

(*e*) I have been using ammonium sulphate on sugarcane with very good results.

(*f*) It is not much used as such in my district.

QUESTION 11.—CROPS.—(*a*) (i) There is a very great scope for improving the existing crops, by selection and by importing better varieties which give higher yield and resist diseases more.

(ii) New fodder crops should be introduced. The usual fodder which is available is of very poor quality in its dry stage and in many places cannot be used while green or as silage as it is not available everywhere.

(iii) The distribution of seed has played a very useful part in our part of the Province and if carried on more will give still more satisfactory and quick results.

(iv) The prevention of damage by wild animals requires help from Government. Up to now practically no help is being given. In my opinion, the following facilities should be given:—

(1) More licenses for guns.

(2) Pig hunting clubs to be formed for each area.

(3) Where Government forests adjoin the cultivation areas, if fences are constructed, the Forest Department should contribute something. Also long-term loans should be given for fencing.

(*c*) Peas, oats and ground-nuts have been successfully introduced by me in my farms and improved varieties of wheat have increased the yields and assured a regular crop owing to rust-resisting qualities.

QUESTION 12.—CULTIVATION.—(i) The existing system of tillage wants a great deal of improvement. About 15 years ago small iron ploughs were introduced, but owing to the War their prices became prohibitive. Their reintroduction is necessary. Also better implements to give hot weather tillage and light harrowing in the beginning of monsoon are necessary.

(ii) In my district wheat is the most important crop and it should be rotated by *masur*, peas or gram—no other rotation being possible owing to the *bhandhwas* system and character of soil.

QUESTION 14.—IMPLEMENTS.—(*a*) The following agricultural implements and machinery are urgently needed :—

(1) Sowing seed drills; (2) light harrow which may stir the upper layer of crust formed in the beginning of monsoon; (3) threshing machine; and (4) reapers.

The introduction of seed drills will greatly depend on the successful introduction of threshing machines.

(*b*) Demonstration of implements and sale on hire-purchase system. Also to make arrangements in many important centres in the district for repairing or replacing broken parts.

(*c*) The manufacturers or their agents chiefly in port towns are not able to demonstrate and sell on hire-purchase system, and do petty repairs. I suggest that either through Agricultural Department or through special societies or private agents this should be done, and in case Agricultural Department does not take up the work the agencies should get all possible help from the department.

QUESTION 15.—VETERINARY —(*a*) Yes. The Civil Veterinary Department should be under the Director of Agriculture.

(*b*) (i) They are nominally under the District Board, but the Board has not enough control.

(ii) No.

(iii) No.

(*c*) (i) No Agriculturists do not much use veterinary dispensaries, because they are situated very far from their villages and the treatment and medicines recommended are too expensive They should be made cheaper by introducing country medicines.

(ii) Same as (i).

(*d*) I would recommend good propaganda and failing that I would recommend even legislation.

(*e*) No.

(*f*) Propaganda is necessary No fee is charged.

QUESTION 16 —ANIMAL HUSBANDRY.—(*a*) (i) Yes. The breeds should be improved. In my opinion cattle which can serve double purposes, *i e*, milch and draught, ought to be selected and improved.

(ii) Special facilities should be given to those who take up dairying. (1) Government should encourage by giving good bulls free or on nominal price. (2) Concessions should be given for grazing in Government forests and in growing fodder crops. (3) Agricultural Department should start model dairies and when fully established and become paying they should be handed over either to companies or private persons

(iii) The present system of animal keeping in my district is one of very rude type In fact no care is taken and all round it should be improved in feeding, breeding and weeding.

(*b*) (i) and (ii) The common pastures are getting less and less day by day and now pasture lands are such as are not suited even for growing ordinary grass.

(iii) Dry fodder in this district is only of two kinds--

(1) Wheat chaff; (2) dry grass from hilly areas and cut when dead ripe. The first one is exported in large quantities to the United Provinces and the second one is of very inferior quality and can rarely be obtained as cultivators have no reserve areas where they can cut grass

(iv) Green fodder in dry seasons is not at all known but its cultivation should be encouraged under all irrigation tanks by charging specially low rates.

(v) I have already stated that fodder available in the Central Provinces (North) is of very poor quality and must be supplemented by better fodders.

(*c*) Fodder in grazing areas begins to be scarce from February and continues so till middle of July.

(*d*) Yes. Supply of fodder in my district can be improved and supplemented by the following ways :—

(1) Encouraging the use of silos and allowing Government forests free to cut grass.

(2) By growing fodder crops in rains.

(3) By growing green fodder under irrigation tanks.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*a*) In my district the cultivator has not got much work on his holdings as most of them grow to a large extent winter crops and in other months they have very little to do. Specially in December, January and in rains they are practically free.

(*b*) Yes. Spinning and weaving and other cottage industries.

(*c*) Bee-keeping, poultry, sericulture and lac culture and basket-making cannot be taken up owing to caste prejudice and fruit-growing is not possible generally for lack of roads; water-supply and climatic conditions are also not very suitable.

(*d*) Yes. Government should establish industries which can be made profitable and to that end enquiries should be made.

(*e*) No. As industrial concerns engage permanent labour, neither cultivators nor agricultural labourers can get any advantage from them.

(*f*) Yes.

QUESTION 18.—AGRICULTURAL LABOUR.—(*b*) Yes, labour is getting very scarce and is due mostly to epidemics and poverty owing to uneven employment on agricultural operations.

QUESTION 19.—FORESTS —(*a*) More concessions should be given to grazing; at present the rules permit only for bullocks and a certain number of cows. But dairy cattle should also get the same concession, and in blocks where grazing is not allowed, Government should allow cultivators to cut grass free both when green and ripe.

QUESTION 20 —MARKETING.—(*d*) I suggest that an agricultural magazine or weekly paper on a very large scale should be published either by Agriculture Department or private agency or through Agricultural Associations and this information may be given through them

QUESTION 21.—TARIFF AND SEA FREIGHTS.—(*b*) Sea freights and railway freights do in many cases adversely affect the cultivators and they should be so changed that cultivators may get the best advantage

QUESTION 23.—GENERAL EDUCATION.—(*b*) The rural education should be of such nature that the students may be taught from the beginning subjects like nature study, agriculture and gardening besides reading, writing and arithmetic in their own vernaculars.

QUESTION 24.—ATTRACTING CAPITAL.—(*a*) When improvements are fully introduced and return from agriculture made more regular and when men with capital can see model farms making good returns on their investment, then only they can put in more money.

(*b*) The following are some of the causes which discourage owners of agricultural land from carrying out improvements :—

(1) Uncertainty of rents owing to short-term settlements; (2) dependence wholly on monsoon and hence uncertain character of outturn; (3) title of lands in most cases is such that if the owner wants to sell his plot, he is not allowed by law to do so; (4) small holdings in many scattered parts of the village; and (5) crops liable to be destroyed by wild animals and difficulty in obtaining licenses for guns.

Oral Evidence.

32123. *The Chairman:* Mr. Bhargava, you are Managing Proprietor of Messrs. Chandrabhan Behari Lall?—Yes.

32124. You have provided us with a note of the evidence that you wish to give. Would you like to make any statement at this stage, or shall I ask you a few questions?—I should like you to ask me questions.

MR. SHYAM SUNDAR BHARGAVA.

32125. Would you tell the Commission what it is that your firm is engaged in?—We are mostly agriculturists. We have got 60 villages and about 4,000 or 5,000 acres of wheat.

32126. So that you are carrying on farming operations as a limited liability company, is that the point?—No: it is a private firm and two brothers are owners

32127. How many acres are you farming?—About 5,000.

32128. And how many villages have you?—About 60 villages.

32129. What is the system of tenancy by which your cultivators hold their land?—We have generally all malguzari villages.

32130. No ryotwari villages?—None.

32131. Have your company any lands in your own hands?—All these lands are owned by ourselves. We are farming them ourselves. The total area of our estate is about 60,000 acres.

32132. And are the 60 villages you mentioned in the 5,000 acres or in the 60,000 acres?—They are in the 60,000 acres; we cultivate the 5,000 acres.

32133. And you are cultivating the 5,000 acres by hired labour, I suppose?—Yes.

32134. Of the 5,000 acres that you yourselves are cultivating, is any irrigated?—We have just been given a sort of monopoly for a big sugarcane plot. That has not yet come under the scheme: it is lying fallow and we have just started from the last two years to grow sugarcane on it.

32135. Are you irrigating that?—Yes.

32136. How are you irrigating it?—By canal.

32137. What scheme is that canal attached to?—The Pariat Irrigation scheme.

32138. Are you satisfied with the service that you are getting from the system?—Yes, I am perfectly satisfied, because we are the only people taking water from it so far.

32139. Have you any well irrigation at all?—None, practically.

32140. Any tank irrigation?—No.

32141. Apart from this sugarcane just described, what are your principal crops?—Wheat.

32142. What wheats are you growing?—We grow one known as 88, Central Provinces. That was the wheat grown on our farm for a very long time and the Agricultural Department took it from our farm and named it 88. It has been in our farm for the last fifty years. Then we are also growing Pusa No. 12. That is the second largest quantity; and the third is a special cross of our own.

32143. Do you carry on plant breeding experiments yourselves?—We employ one or two agricultural hands; and we have one experimental farm also.

32144. You claim to have yourselves discovered or isolated 88?—I do not know really; it was my father who did it; I was very young at that time.

32145. To the best of your knowledge and belief 88 was evolved on your farm?—I could not tell you exactly, because it was growing there for a long time. We simply gave the department the seed and how we got it, I do not know.

32146. Have you any experimental farm with a whole-time staff engaged on experimental work?—Yes.

32147. How many men do you employ?—We have got two Agricultural Assistants from the Nagpur College, and then I myself have taken a fancy to it and also do the work.

32148. How long has that experimental station been in operation?—Thirteen years now.

32149. Are you satisfied that it is a paying venture?—The experimental portion of it is not paying; but the results are very good.

32150. The results are profitable, are they?—Yes.

32151. Are you satisfied with the type of worker that you are employing on this experimental area?—I am.

32152. They were trained in the Nagpur College?—Yes.

32153. Do you have to pay high salaries to attract the right type of man? Would you tell the Commission what salaries you pay?—I am paying one man Rs. 150 and the other Rs. 85.

32154. What area have you got under experimental crops?—The experimental portion is about 90 acres.

32155. Now, are the results achieved by this experimental station of yours used only by yourselves on your own estate or do you do work for other persons in the neighbourhood?—The other persons of course copy us and we have no objection to tell them the results and allow them to copy them.

32156. Do you think that they take interest?—In some of the things.

32157. Would you tell the Commission what experience you have had in the matter of manuring for wheat? What manures are you using?—We do not use manures for wheat on our side, because unirrigated areas can do without manures.

32158. You use no fertilisers at all?—No fertilisers at all. The only thing that we do to keep up the fertility of the soil is to have a rotation of crops.

32159. What is your normal rotation?—A kind of pulse called *masur*, also peas and gram, but *masur* is the chief thing.

32160. *Sir Ganga Ram* No cotton?—We have no cotton on our side.

32161. *The Chairman* How often do you grow wheat on the same piece of land?—We grow wheat for five or six years, and then give a rotation.

32162. You grow 4 or 5 wheat crops running on the land?—Yes, and then there is a rotation for one or two years.

32163 A rotation with other crops, and again you grow wheat?—Yes.

32164. How long has that been going on in your land?—I should say for quite a long time. This practice was used by my father; he was a big farmer himself.

32165 Has that been going on for thirty years?—Much more than that. Our farms are about ninety years old now

32166. What is your average yield per acre in a good year?—About 9 to 10 maunds.

32167. You can maintain that on the system which you have been describing?—Yes. All these lands have been under wheat cutivation for at least eighty to ninety years now.

32168. Have you experimented with cowdung?—We have, but we generally use cowdung for our paddy crops.

32169. What is the result of manuring with cowdung on your wheat land?—It does good, but we cannot find enough of it.

32170. Do you mean to say that you are so short of manure that you prefer to concentrate on your rice crops?—Yes, but we grow rice in very small areas in each village.

32171. Is that mainly for food for your employees, or do you market the rice?—We mainly give it to the labourers.

32172. You pay in kind?—Mostly in kind

32173. To what extent have you succeeded, if you have attempted it, in persuading the cultivators on the rest of the estate to sow improved varieties?—They are forced in a way, because we lend them the seed, and we generally lend them improved seed; so they are forced to grow those varieties and they like them.

32174. On what basis do you lend the seed?—It is *sawai;* we charge one-fourth of what we give in seed.

32175. You are repaid in seed?—Yes.

32176. Apart from that, do you, as a farmer, lend money to the cultivators?—We lend money to our own cultivators, not to outsiders.

32177. *Sir Ganga Ram:* At what rate of interest?—From 12 to 15 per cent per annum.

32178. *The Chairman* Are there any co-operative credit societies operating in your neighbourhood?—I was Secretary of the Jubbulpore Central Bank for a long time, but in spite of my efforts all the societies in my villages have been closed down.

32179. Why?—They do not like joint responsibility.

32180. Who decided to close them down?—They themselves.

32181. How many societies were at work?—There were about 7 in my villages.

32182. They have all disappeared?—All except one have disappeared, and even that one is only lingering on.

32183. Did you take over their responsibilities?—Not much, about 10 per cent of it.

32184. Before they went into liquidation?—Yes. Although I persuaded them to the best of my ability not to go into liquidation, I was not successful. I am still connected with the Central Bank, I was its founder, and for twelve years I was its Secretary

32185. Are these estates your own estates or the company's estates?—We are two brothers, and they are our estates.

32186. On your private estate, are the tenants seriously indebted as a class?—They are not at all seriously indebted. In a good many villages, there are absolutely no debts.

32187. Your principal crop for marketing is wheat?—Yes.

32188. How do you market, do you go through the ordinary markets, or do you go straight to the merchants?—We have got our own grain shops.

32189. That is retail?—They are for exporting it to Bombay. We have got our own grain shops at the railway stations, and along with the grain shops we have got our own firm.

32190. Of merchants?—Our own shop, I should say, where we stock it and send it to Bombay.

32191. Where do you yourself actually part with the wheat, at your station or at Bombay?—At Bombay.

32192. You hold the wheat till you get to Bombay?—Yes.

32193. Do you forward the wheat from other cultivators?—Yes.

32194. So that you are, in fact, merchants?—We are merchants also. We always get much better prices in Bombay. The name of our firm is well known down there for quality, as we have been growing wheat from selected seed for the last fifty years at least.

32195. Where do the cultivators on the estates, who are cultivating their own holdings, market their wheat?—They generally bring it to the railway station, and sell it off either to our firm or to other firms at the railway station.

32196. In cases where you lend seed to cultivators, I suppose the whole crop comes to your hands?—No, we claim only the seed.

32197. They are free to do what they like with the merchants?—Yes.

32198. In fact, do they usually come to you?—Not always.

32199. When they do come to you, how do you fix the prices that you give them?—The prices are governed by the Bombay rates.

32200. What I want to get from you is, does the cultivator bringing his wheat to you get better prices for it than he would get if he went to the local market, where of course the wheat would have to carry all the marketing charges?—I do not think that there is much difference between these two, because after all in the market selected varieties of wheat are sold.

32201. But probably there is the municipal tax to pay?—We have to pay those ourselves.

32202. Where do you pay those dues?—If there are municipal limits, as soon as we come within the municipal boundary, we have to pay, and if we go out we get a refund; that is, when we export, we get a refund.

32203. So that you do not, in fact, pay them?—But then I think the merchants calculate on the expenses between the local place and Bombay.

32204. I am concerned with the price the small cultivators are getting for their grain, and I am trying to get from you whether, when that small quantity is brought direct to you as a merchant, the cultivator gets a better price than he does when he takes the grain to the ordinary local market?—I do not think there is much difference. The only advantage that we get by having these export firms which send the goods to Bombay is that we can regulate the quality right up to the delivery of the goods in Bombay. Otherwise Pusa 12 is mixed up with another variety of hard wheat, and they get less price. Outside that, I do not think there is any practical advantage, because there is so much competition in the market that the local tenant does not lose much in prices.

32205 I do not quite understand Do you take grain in bulk from your cultivators, or do you make them bag the grain?—We take it in bulk.

32206. So that the ordinary charge for bagging is saved?—Yes.

32207. What about the ordinary *dalali*, that is to say, the brokerage in the local market; is that charge not saved?—That is saved.

32208. What about charity tax? Is that paid when the grain is brought straight to you?—No. If the tenant gives us his grain, he generally does so in his village, but if he goes to the market he generally goes to the other firms.

32209. Do you charge for *adtri*, is there any fee for advancing?—We do charge, just as we charge any other man.

32210. And yet, in spite of the savings which you and I have agreed do exist, you do not think that the cultivator gets better prices for his wheat when he brings it to you than when he takes it into the local market?—There is not much difference.

32211. How many pairs of bullocks do you keep on your estate?—About 400 pairs.

32212. Have you any system of growing fodder for them?—None, excepting a bit of *juar*. We do not have any other fodder except grass on our side; grass is plentiful.

32213. You have no fodder shortage?—No.

32214. Can you keep your bullocks in fair condition throughout the year?—Yes. In fact, for any number of cattle we can have fodder there, as it is very cheap. Now, with the irrigation canals, we are attempting a number of varieties of fodder, and the ones that I have grown so far have been most successful. I have tried *berseem*, Guinea grass and carrots.

32215. You store the carrots and keep them?—Last year we tried to grow them for about 4 months in batches; this year I am going to dry them up, because I can grow them cheap, my cost, all told, does not exceed 1½ annas per maund.

32216. *Sir Ganga Ram:* What about turnips?—We have tried them, but they do not grow well.

32217. *The Chairman:* And Guinea grass?—It does well, but it does not grow during the winter months.

32218. How about the provision of fuel for the villages on your estates? Is there any difficulty in providing for that?—We have forests near almost all our villages.

32219. Belonging to the villages?—Yes.

32220. Do you control the grazing in those forests?—Not in the whole of the area. If the forest area is much bigger than the general requirements of the village we reserve some of it and allow free grazing, timber and fuel in the rest.

32221. Do you attempt to control the cutting of wood for fuel?—Yes, if we think there is too much for the village we reserve some of it. It depends on the size of the forest and the population of the village.

32222. Is the supply of fuel keeping up, or do you think it is diminishing?—I do not know. We have not had any complaints from the villagers.

32223. On page 427 you refer to the better financing of agricultural operations and suggest the setting up of special banks to be known as Agricultural Banks. Are you thinking there of land mortgage banks?—Yes.

32224. Are not the cultivators in your villages holding their land on occupancy terms only?—Yes.

32225. Have they anything at all to mortgage?—Not very much.

32226. Do you think land mortgage banks are likely to be successful in that case?—In the case of malguzars they would be. There are some people who hold land on absolute transferable rights. I would recommend that after a certain period of years occupancy rights should be made transferable.

32227. So far, I take it, you have been dealing with the provision of long-term credit for land improvements and so on. What about short-term money? Do you think the primary credit society is the best means of providing for that need?—I still think the co-operative banks are best, working through primary credit societies.

32228. You think that is the best way of assisting the cultivator?—I can think of no better

32229. But you have not succeeded in keeping alive a single society on your own estates?—That is so, but I cannot think of anything better.

32230. Have you any experience of the administration of *taccavi* loans, and any suggestions to make in that connection?—I am not well acquainted with that subject

32231. Have you known cases where applications which seemed to you reasonable have been refused?—I do not know much about it

32232. Do you keep a special veterinary service of your own to deal with the large number of working bullocks you possess?—No

32233 Have you considered the wisdom of a step of that sort?—We depend on the crude methods of the villagers who treat the animals

32234 Do you yourself believe in modern veterinary practice, or do you think the indigenous methods are good enough?—I have not tried the new methods much because our farms are far away from the veterinary hospitals.

32235. Have you veterinary dispensaries under the Local Boards in your district?—Yes.

32236. Do they not serve the population on your estates?—They do. I have been Chairman of the District Board for the last three years. Those dispensaries, however, are generally used for inoculation against rinderpest and for castration, and not for other purposes.

32237. Have you advocated the wider employment of professional veterinary skill amongst your cultivators?—They get very little chance of using it, because they are so far away from the nearest veterinary station.

32238 What about meeting the emergency of epidemics? Do the veterinary officers carry out inoculation against rinderpest?—They do, and that is successful.

32239. Is that popular with the people?—It is becoming so.

32240. With regard to fodder, have you attempted to make silage?—Yes, we have been using silage for the last fifteen years, making it in a pit.

32241. Has it been a success?—Yes.

32242. How much do you make?—It is for a herd of 60 cattle We use about 2,000 maunds of wet grass

32243. Is that for a working or a milch herd?—Milch

32244. What do you do with the produce of that herd?—Sell it in the city

32245. Retail?—Yes.

32246. Who consumes it?—There is a big demand for dairy produce in the town.

32247. Is it a profitable side of your business?—Not yet

32248. You hope it will be?—Yes. We are trying to cross the breeds.

32249. So as to increase the milk yield?—Yes.

32250. Are you getting any working males from that herd?—We are.

32251. Are you satisfied with them?—Yes.

32252. Have you a bull that satisfies your requirements?—Yes. For a long time past we have been getting bulls from Hissar. Our old home is near Delhi, in the Gurgaon district.

32253. You get your bulls from that district?—Yes.

32254. What are you going to do to increase the milk-yielding qualities of your herd?—We find two things are sufficient: breeding and feeding. The use of Hissar bulls and proper feeding are sufficient We have enough fodder but it has a very low nutritive value, and so though the animals used to get enough to eat there was nothing to keep up their milk-yielding qualities.

32255. What have you to say about silage in relation to milk-yield?—It is much better than dry grass.

32256 You are rapidly approaching a stage where you may hope to have a profitable dairy business?—Yes I have lost over Rs 60,000 on dairying experiments (the dairy is attached to my experimental farm) but now we have much better hopes, because some of the heifers are giving 28 lbs. of milk a day.

32257. I think you are doing a public service as well?—It will take another ten years before we have a large enough herd to make the whole thing pay.

32258. *Sir Henry Lawrence* What cows are you working with?—The local Jubbulpore cows We got some cows from Hissar, but they are too delicate for this climate.

32259. *The Chairman*. Are your neighbours taking an interest in these activities of yours?—I do not think so, because they see we have lost money by them, and they think these experiments should pay immediately.

32260. They are waiting until you succeed, and then they will copy you?—They will not only be able to copy us, but take advantage of our bulls and breeding.

That is good business from their point of view.

32261. *The Raja of Parlakimedi*. Wheat is your principal crop?—Yes.

32262. Is it bearded or unbearded?—Mostly unbearded We grow bearded wheat on our border lands, where we have considerable trouble with pigs; but not much.

32263. Do you grow the whole area as an irrigated crop?—No, we do not grow irrigated wheat. We have embankments round our fields which keep the water there from June to October and leave enough moisture on the land to allow of a normal wheat crop.

32264 In times of drought, would it not be better to have the possibility of irrigation?—In times of scarcity our water tanks would remain empty.

32265 If the tanks were filled in the rainy weather there would be enough water left in them when the wheat matured, and you could irrigate it from that?—It would not be practicable in my district; we cannot have irrigation unless we have a small stream, or something of that sort. Dams which merely hold up the water which comes in the rains are generally exhausted by the time we require water for wheat That is the general complaint against irrigation tanks in my district.

32266 Do you get better price for the bearded or the unbearded wheat?—There is not much difference between the two, as long as they are the right varieties.

32267. Of the two, which is the better drought-resisting variety?—The bearded. Rust is our chief trouble, and the unbearded is the better rust-resisting variety.

32268. You say on the first page of your note that demonstrations ought to be carried out more freely and free of cost. What is the rate charged at present for such plots?—What I had in mind there was this sort of thing. For a number of years we have been using an improved plough, called the monsoon plough, on our estates, and we have a large number of them. They have proved very useful, but the poor villagers have not been able to adopt them. Lately the Agricultural Department has been trying to reintroduce the iron

plough. Iron ploughs were introduced in our district before the War, but the War sent the price of them up to such an extent that they had to be given up, and the people forgot how to use them. Now we want to bring them back into general use. The difficulty comes in when you go to a village and tell the man that the Government will plough for you at so many rupees an acre. He hesitates to pay anything before he actually knows what the results are going to be. No doubt people look at it from the point of view that so much area is ploughed for so many rupees; they do not know that it adds to the fertility of the soil. All these things have to be shown to the people free of charge, at least for the first time. I do not mean to say that every tenant in every village should be shown. A central place might be chosen to which people from 7 or 8 miles could come and see the demonstration carried on. They may do like that at different centres Once the people know that a certain plough, for example, gives good results they will certainly go in for that. It is very few that are so advanced as to go in for these improvements at once without practically seeing the results.

32269. What plough do you use on your field?—For every day use we use the wooden ploughs; but in every three or four years we use the other ploughs and turn the soil.

32270. How about the people in the locality? Are they convinced of the benefits of this sort of cultivation?—They are; we have got a steam tackle outfit now and people would pay even Rs. 17 for having their land ploughed with it once.

32271. Who has introduced it?—The Local Government has purchased it. We, the Legislative Council members, pressed to get the money sanctioned and it is now in use in our district It is the first steam tackle we have in the Central Provinces and it was working on my farm last month. It looks as if it is going to be a very good thing; it will do very much good to our part of the Province.

32272. People are taking to it?—Yes. The tractors are a failure in our Province.

32273. How many acres per hour can a steam tackle outfit plough?—If there is a big square field I think it can plough at the rate of one acre per hour.

32274. How deep does it go?—From 9 inches to 14 inches; but I have been content with 9 inches.

32275. What part of an acre can it plough in one hour, how many cents?—If you want a depth of 9 inches it can plough about an acre in one hour; that is what I have done on my farm; of course it depends on the soil, the size of the field, the moisture in the soil and so on.

32276. What kind of soil exists in your estate largely?—Black cotton soil mostly, on which we grow wheat.

32277. Why do you not try cotton?—We have too much rainfall; our rainfall averages between 50 and 60 inches in the period from mid-June till mid-September; then the dry weather sets in so that there is not time enough for cotton to mature.

32278. On page 427, you say that the Veterinary Department should be under the Agricultural Department?—Yes, that is my view because I think it will then become more popular than it is now. My experience is that the Veterinary Services are not much appreciated or used by the villagers because they are far away and are stationed in big towns generally and these villagers cannot go to the towns. They do not get these services in their villages and so the cases there are not treated at all. If we attached the Veterinary Service to the Agricultural Department the Agricultural Assistants would try to advocate the use of the veterinary treatment during their tours and so on.

32279. Are you taking advantage of veterinary science on your farm? Are you getting your cattle treated by the Veterinary Department people?—Except for inoculation and castration I am not using them on my estate.

32280. For the general treatment of the cattle, whom do you depend on?—I told you about the old method of the *gaolos;* the old man in the village does the whole thing.

32281. We have been told about the hot iron touch if the animal suffers from stomach-ache and so on. Do you adopt that system?—If the old man advises we have to follow it.

32282. You have on your farm some people trained in agriculture to tackle cross-breeding or inter-culture of crops. Why do you not have a man qualified in veterinary science and see whether his methods are more efficient in comparison with the local indigenous methods?—I must admit that we have not paid enough attention to the cattle side; beyond that I cannot say anything. For the last so many years our attention was divided between improved implements and improvement of cattle. For instance, we have tried tractors and things like that in order to avoid having bullocks, but they have been a failure. Now the Government is demonstrating steam tackle ploughing and if it proves successful we may go in for more such things.

32283 Is your whole farm on one level or on different levels?—I have got one block consisting of 48,000 acres and comprising 40 villages; the rest forms another group.

32284 Let us take the largest block, is it fairly level?—Excepting small hills and streams the whole is fairly level.

32285. In that area how have you divided your fields? How many acres would a field consist of?—Each field ranges from 2 to 40 acres Each is *bunded* round with a mud wall from 3 to 10 feet in height.

32286. In such large fields could you not make use of machinery for ploughing?—We could, but we have not yet had enough time to say anything. We have tried tractors and we have found that they are not powerful enough in my part of the country I am told that in Nagpur they are doing well but I understand they are costly things. Experiments with such things ought to be taken up by the Government so that if they turn out to be successful the villagers will follow them, otherwise not.

32287. Why do you not ask your Local Boards to devote some of their funds for such experiments?—I was Chairman of the District Council myself till about two months back Our District Boards are very poor and they cannot afford to incur such expenditure.

32288 What is the revenue of your Board?—It is about 3 lakhs of rupees and we have about 253 miles of road to maintain in the Jubbulpore district, and besides we have 250 schools to run and we are hardly able to pay the school teachers I could not myself do it although I was at the head of the whole show.

32289 Are your roads maintained efficiently? Are all of them metalled?—Very few of them are metalled, but that is again due to lack of funds. We could not get anything during the last three years from the Local Government because of the policy of the Swarajists, of whom I was one, and we could not run dyarchy in this Province. Whatever it is, I think it is beyond the power of the Local Boards in our Province to undertake such things.

32290. What consumes most of the District Board's revenue?—The school teacher, education.

32291. Up to what standard do the schools teach?—We teach only vernaculars, mainly Hindi.

32292. What is the average pay of the teacher?—The highest teacher gets Rs 45 and the lowest Rs 20, and we have something like 410 teachers.

32293. Who controls their appointment?—The District Board.

32294. Is it done through a committee?—Just a small committee known as the Education Board.

32295. Do you have any sort of examination for selecting them?—They are all trained teachers, trained in the Government schools.

32296. Before appointing them you insist upon a certificate of training?—Yes; we only take trained teachers.

32297. Suppose you had only two appointments and half a dozen applications, what test would you apply in selecting the candidates?—If all of them are trained men of course recommendations and things like that go a great way; otherwise we select according to the certificates they have.

32298 *Sir James MacKenna*: Have you had any agricultural training yourself?—No.

32299. You know just the business side of it?—Yes.

32300. Have you found the local Agricultural Department of considerable assistance?—I have tried to take the fullest advantage of it.

32301. What sugarcane do you grow?—We are now trying to grow CO. 210.

32302. How is it doing with you?—It is doing fairly well.

32303. That I suppose is introduced by the Agricultural Department?—Yes; Mr. Sayer when he came here recommended it

32304. How are the Pusa wheats doing; there was a certain amount of comparison drawn between them and the local Jubbulpore wheats?—They are doing well. Pusa 12 is the best with us.

32305 Is it better than the local varieties?—Yes; it is much better; it does very well on the best land Supposing we have a first class field and we put Pusa 12 on it, we can expect 10 maunds, and if on the same field we put any local variety we would only get 8 maunds. But, on the other hand, if we put Pusa 12 on inferior land the results would be the other way; Pusa 12 would yield less than the local variety I consider therefore that Pusa 12 would do very well on fairly well cultivated land.

32306. The standard of cultivation is an important factor?—Yes.

32307. You lend money to your tenants at 10 to 15 per cent. Are your tenants of long standing?—Yes

32308. A sort of feudal relation exists between them and you?—Yes. Most of the villages are under us for the last 80 or 100 years.

32309 So that there is a feeling of personal attachment always between the tenants and the landlord?—Yes

32310. You do not think that it has perhaps something to do with the success of the co-operative societies if the personal touch is so strong?—When I became Secretary I tried to persuade the co-operative societies to lend money actually at 9 per cent, because the reserve fund will be their own and, if there are honest assistants, they can use it for some public benefit in their own village. All the same I am sure there are some people who try to take undue advantage of the joint responsibility and the villagers are now getting nervous about joint responsibility.

32311 You think that is the reason, and not the fact that you give money at a comparatively cheap rate?—In fact I refused to give them money and insisted on giving it at 24 per cent to those very people who were members of the societies to try to discourage them from taking money from me; but in spite of that they would not go to the societies; then I withdrew that condition and gave them money at the original rate.

32312. Were you or are you a member of the local Legislative Council?—I am now a member and I was in the last Council also.

32313 And you told us that you were a Swarajist?—Yes.

32314. What is the attitude of the Council towards agricultural questions?—I hope it will be quite good.

32315 In the last Council?—In the last Council our policy was not to work the Transferred side at all, whether it was veterinary or agricultural

32316 Although you are an agriculturist you had to sacrifice your interest to political exigency?—I am a malguzar and I still advocate that occupancy tenants should get transfer rights; perhaps if my constituents know that I advocate transferring of occupancy rights they will not elect me again. This time I am sure that the Council's attitude is going to be very sympathetic.

32317. *Prof. Ganguleo* Do you employ many farm labourers?—Yes.

32318 Do you pay them cash wages?—Mostly in kind

32319 What is the arrangement?—We generally pay about Rs. 2 a month cash and the rest is given in grain

32320. How much grain do you give?—It is given several times in the year At the close of the harvest they get something like two bags each, and then they get something monthly as well. We have a standard of wages. We pay Rs. 7-8-0, *i.e.*, Rs. 5-8-0 worth of grain and Rs 2 in cash.

32321 The total wages for 30 days is Rs. 7-8-0?—Yes

32322. This farm is solely in your hands?—Yes.

32323. And when you come to town who looks after it?—We have got a paid staff in every village, a farm manager.

32324. How many farm labourers do you employ from season to season?—Generally we have about 400 men on the permanent list, but it all depends on the seasons.

32325. What is the average wage per labourer in your district?—From 4 to 5 annas a day per man.

32326. Do you keep farm costings of your operations?—Yes.

32327. Could you give us the cost of cultivating an acre of wheat?—I have not got any papers here with me.

32328. *Mr. Calvert*: Could you give the cash requirements for cultivating an acre of wheat?—Generally in our district it costs us Rs. 20 an acre.

32329. *Sir Ganga Ram*: Do you pay the revenue or do the tenants pay?—For instance, on our own farm we consider ourselves in two capacities: one as the landlord of the village and the other as the farm manager. For the farming side we have to charge rent just as is charged for wheat and credit it in our own books as a landlord in the same village.

32330. *Mr. Calvert:* You say the Usurious Loans Act should be applied? Is it not being applied?—No; generally, towards our side, even if the tenant has got an understanding with the banker to pay something like 40 per cent interest, he would get the same sort of decree

32331. *Sir Thomas Middleton*: You are your own landlord? What is your land charged at?—My lands have been charged at very low rates at this settlement. The rates will be enhanced very much this year because my father did tremendous improvements in the way of *bunding* up fields during the famine of 1900 The Central Provinces rules are that if one spends Rs. 25 per acre on improvements then for one term of settlement the same rent is allowed and there is no enhancement.

32332. That is with regard to your land revenue payments. But we are talking now of the payment of rent?—In this Province, the Settlement Officer fixes the rent for each plot whether farmed by the owner or by a tenant. A list is made out and for each plot of land they fix the rent The whole thing is totalled up and 50 per cent roughly goes to the Government and 50 per cent remains with the landlord

32333. You told us you were yourself owner and occupier of 5,000 acres. You keep books and you credit yourself as the owner with your rent. On that 5,000 acres how much rent do you credit yourself with as owner?—At present Rs. 6,000, but it will go up in the usual course to Rs. 15,000.

32334. You have come to the conclusion that dry fodder is not a suitable dietary ration for cows?—Neither for cows nor for bullocks.

32335. How do you feed your dairy cows in the dry season?—We have been experimenting so far and pumping up water from the river and growing a small area but now we have a big irrigation scheme practically at our disposal.

32336. You are trying to grow green fodder?—Yes, only for the past two years.

32337. What are you giving them, in the way of oil-cake or grain?—Oil-cakes we get in the local market.

32338. What are you giving your cows?—I am giving my cows about one-third grain for the milk that they yield and I feed them with carrots.

32339. Who told you to give them one-third? Have you been consulting the Agricultural Department?—I got my idea by reading the American papers.

32340. Do you know whether any people in your district give their milking cows oil-cake?—Every one does.

32341. Do you give *chuni*?—Yes.

32342. What kind of *chuni*?—It is mixed and comes from various places and we are unable to distinguish from which *dal* it is made.

32343. And everybody uses that for the milking cows?—Yes.

32344. What happens if the cows are not being milked but are rearing calves?—Then no *dhana* is given.

32345. Do you breed any of your own work cattle?—We have got a large number of cattle which we allow to graze in the forest and from these we get our working stock.

32346. You do not require to give *dhana* in any such cases?—No, but they must be of small type and small cattle.

32347. *The Chairman:* You and your brother, in association, are farming these 5,000 acres of land as a large scale operation and you told the Commission that you have very complete costings? I think it would be of very great help to the Commission if you could assist us in discovering how large scale farming compares in the matter of profit with small scale farming as practised by the cultivator, and if you could let us have as many of your figures as you would care to entrust us with, we should appreciate it very much; and if you would plainly mark such of your figures as you do not want published that would be of help?—We have no secrets.

32348. Can you at this moment express any opinion as to the varying profitableness of small scale operations and large scale operations?—The small scale operations are generally adopted by those who have small lands.

32349. I am thinking at the moment purely of the economics?—According to the Indian custom the holdings of a man are divided every time a man gets a son. I know that it is a great drawback especially because it scatters the holdings.

32350. You and your brother are alive to the disadvantages of sub-division, I take it. But you have kept together in this?—Yes.

32351. So that you have been impressed with the importance of large scale operations where possible?—Yes, I am. We have tried to make our farms as compact as possible in our villages. For instance, if we had 50 fields scattered over the whole area we have tried to exchange that with the mutual consent of the villagers. In our Province once the land is given as occupancy right it is not left to our option to take back the land except with the consent of the tenant.

32352 What is the largest rice field that you have?—I am not doing much rice cultivation; the total does not exceed 50 acres.

32353. As regards wheat, have you got any very large fields?—Some of them are 90 acres, all *bunded* about 30 feet high.

32354. 30 feet *bund* all round?—Not all round, just on one side.

(The witness withdrew.)

Mr. H.H. PETERSON, B.A., Secretary, Y.M.C.A., and President, The Empress Mills Co-operative Stores, Ltd., Nagpur.

Note on the Marketing of Grain.

I understand that surplus grain produced by the cultivators is ordinarily disposed of in one of three ways—

(1) Sold to the local malguzar or given to him in repayment of loans.

(2) Sold to a travelling merchant, such as the *Kutchhi*, who may perhaps have given cash advances previously.

(3) Sold in a *ganj* or market in a larger town

It is with this last method only that I am conversant. Grain is brought in carts, sometimes from a distance as great as 100 miles by the cultivator to the *ganj*. Here it is sold either by auction or private sale to a wholesale merchant, through the instrumentality of a *dalal*, or petty broker, who takes a commission from both parties. Ordinarily the *dalal* is registered by the local municipality and the *ganj* is more or less supervised by them. After the grain has been measured and paid for, the cultivator is free to return to his village. One individual seldom brings into the *ganj* more than 10 or 20 bags of grain at a time.

I would suggest two ways of improving the existing system of marketing :—

(1) Standardisation of weights and measures

(2) Improving the *ganj*.

Let me first point out the present confusion of measures In the Central Provinces grain is usually measured by quantity, not weight. The unit of quantity is supposed to have some relation to weight, but often is wide of the mark. For instance, in Nagpur, the unit is the *paili*. There are eight *pailis* to a *kudu* and 20 *kudus* to a *khandi*. The Nagpur *paili* is supposed to contain 100 tolas by weight (the weight of 100 silver rupees) but actually it contains about 105 tolas. For a few places the units and amounts are—

		Weight in tolas.	
Town.	*Unit.*	*Nominal.*	*Actual.*
Nagpur	Paili	100	105
Bhandara	Kudu	800	850
Tumsar	Kudu	800	860
Raipur	Khata	400	390
Drug	Khata	365	Unknown.

Besides these variations in the measures used, there are two other serious objections to the measuring of grain by quantity rather than by weight. In the first place, measuring by quantity takes much longer than to weigh a bag and costs far more in labour charges. In the second place, there is much more chance for fraud. A clever man can easily add or substract 5 per cent from the correct amount. Merchants frequently bribe the measuring coolies and this fraud is impossible to detect unless the grain is remeasured. In May 1916 the Nagpur *ganj* was closed for a week on this account.

I would suggest, therefore, that steps should be taken to abolish all such measures of quantity and that the standard seer of 80 tolas should be adopted as the unit for measuring grain. This would suit both wholesaler and retailer admirably. For wholesale transactions the rate would be so many rupees per maund (of 40 seers) and for retail, the simplest measure would be so many seers per rupee.

Gunny bags for grain vary in capacity from 2 to 3 maunds with the average at about 2½ maunds Under the weight system, each bag could be filled full irrespective of the size of the bag.

As regards improvements in the *ganj*, I have several suggestions. Grain is sold by two methods in different places. In the majority, it is sold privately, that is, buyer and seller are brought together by a *dalal*, or petty broker, who takes rather a large commission for his services (about half per cent of the value). He has no

other function than to arrange the sale. Since the wholesale merchant buys many times and the individual cultivator sells only once, it is obvious that the *dalal* will ordinarily favour the merchant rather than the cultivator and will try to beat down the price as far as possible and close the bargain before some other merchant can offer more.

I feel that the *dalal* can be dispensed with altogether, provided that his small part of the transaction can be accomplished in some other way. The best way to do this is to sell all grain by auction. This is being done in some places. The *dalal* has not been done away with entirely even there, for his is an ancient profession in India. It is quite possible, however, to do away with him and several other evils in the scheme I propose.

All grain should be sold in the *ganj* by public auction. The auctioneers should be employed and paid by the municipality and they should keep a public record of every transaction. Upon bringing his grain to a *ganj* the cultivator should be obliged to pay a fee of about ½ anna per bag. This fee would entitle him to the services of the auctioneer, and two days' rent of the space occupied by his grain. All sales in the *ganj* should be by auction, though the seller would have the right to refuse the price offered in the auction. (This is the usual custom at present.) If the seller did not sell his grain within the two days, he would be obliged to remove his grain or pay the fee again for an additional two days. Upon sale, the grain would be filled into bags and weighed on the official *ganj* scales, which should be of the direct reading kind and capable of weighing not less than 10 bags at a time.

The chief advantages of the scheme would be—

(1) Prices would be stabilised since all transactions would be in public.

(2) The inexperienced or ignorant cultivator would be less likely to be imposed upon.

(3) All fees at present paid to the *dalal* by both parties would be eliminated.

To show that this scheme is quite practical financially, I have drawn up a rough budget of receipts and expenditure for a *ganj* such as I propose. The figures, of course, can be only very rough:—

		Rs.
Capital Expenditure—		
Cost of land	...	10,000
Cost of buildings and equipment	...	10,000
		20,000
Expenditure—		
Interest on investment at 6 per cent	..	1,200
Depreciation at 4 per cent	..	400
Salaries: 1 head auctioneer at Rs. 60 per mensem (12 months)	...	720
5 auctioneers at Rs. 40 per mensem (12 months)	...	2,400
5 do. do. do. (6 months)	...	1,200
1 clerk at Rs. 30 (12 months)	...	360
1 armed watchman at Rs. 30 per mensem (12 months)	...	360
4 ordinary watchmen at Rs. 15 per mensem each (12 months)		720
1 sweeper at Rs. 10 per mensem each (12 months)	..	120
Stationery and miscellaneous	..	200
Total	...	7,680
Receipts—		
For 6 months at the rate of 2,000 bags per day For 6 months at the rate of 1,000 bags per day Total bags 540,000 at 6 pies	...	Rs. 16,875

So far I have discussed principally the first part of the marketing system—the sale by the producer to the wholesale dealer. For the balance of the process by which the

grain gets into the hands of the consumer, I feel that the use of figures will be most satisfactory. The accounts I will give below are to be considered typical of the purchase of a wagon load (200 bags) of medium quality rice in Raipur, the centre of the largest rice-producing area in these Provinces, its shipment to Nagpur and distribution to the consumers.

	Rs.	a.	p.
Purchase price of 200 bags of medium quality rice in Raipur *ganj*. Rate taken as Rs. 13 per bag of half Nagpur *khandi*	2,600	0	0
Dalali (commission paid to petty broker) at 4 annas per cent of purchase price . ..	6	8	0
Measuring charges at 6 pies per bag ...	6	4	0
Gunny bags, rate Rs. 50 per 100, may be used 4 times $\frac{50 \times 2}{4}$	25	0	0
Cartage to station at 9 pies per bag	9	6	0
Coolies at 4½ pies per bag	4	11	0
Twine and sewing at 1½ pies per bag .–	1	9	0
Dharmada (charity payable to a Hindu society for distribution to poor) at 1½ pies	1	9	0
Goshala (charity payable to cow protection society) at 1½ pies	1	9	0
Arranging bags on station at 1½ pies per bag ...	1	9	0
Adat (commission) payable to Raipur commission agent who advances the cash for the purchase and arranges for the forwarding, at Re. 1 per cent	26	0	0
Railway freight on 200 bags (one wagon), 505 maunds at 6 annas 8 pies per maund	210	6	8
Nagpur Town duty at 6 pies per maund . .	15	12	3
Nagpur station unloading at 8 annas per 100 ..	1	0	0
Cartage to warehouse at 1 anna per bag ...	12	8	0
Rent of warehouse, servants, etc., chargeable to this amount of grain (roughly estimated)	10	0	0
Travel to Raipur (the ordinary merchant generally buys about two wagons at a time). Half cost of travel charged...	5	0	0
Total cost to wholesale merchant ...	2,938	11	11
Wholesale rate of sale of this grain would be 5½ *pailis* to rupee or Rs. 30-8-0 per *khandi* for 100 *khandis*	3,050	0	0
Adat (commission) charged to retailer in addition to purchase price at 6 pies per bag	6	4	0
Total received by wholesale merchant ...	3,056	4	0
Total paid by wholesale merchant ...	2,938	11	11
Profit on transaction ...	117	8	1

Profit divided by amount paid = 3·98 per cent net profit on turnover.

This figure should be taken as the average, but in actual practice the profits vary greatly according to the condition of the selling market For instance, if the Nagpur wholesale rates should fall from 5½ *pailis* to 5½ *pailis* per rupee he would make a small loss, whereas if it should rise to 5 *pailis* per rupee the profit would be substantial.

MR. H. H. PETERSON.

Thus it can be seen that on a rising market the wholesaler is able to make very considerable profits, while on a falling market he may easily suffer a heavy loss.

	Rs.	a.	p.
Price paid by retail merchant at 5¼ *pailis* per rupee, Rs. 30-8-0 per *khandi* for 100 *khandis* ...	3,050	0	0
Adat (commission) paid to wholesaler, in addition to purchase price, at 6 pies per bag ...	6	4	0
Measuring charges at 1 *paili* per *khandi* (1/160) ...	19	1	0
Gunny bags at 2 annas per bag	25	0	0
Cartage at 1 anna per bag	12	8	0
Twine at 1½ pies per bag	1	9	0
Sewing at 3 pies per bag	3	2	0
Dharmada at 3 pies per bag	3	2	0
Rent, lighting and miscellaneous (roughly estimated) ...	10	0	0
Total cost to retail merchant ...	3,130	10	0
Retail rate of sale of this grain would be 5 *pailis* per rupee or Rs. 32 per *khandi* for 100 *khandis* ..	3,200	0	0
Total amount received by retailer . .	3,200	0	0
Total amount paid by retailer	3,130	10	0
Profit on transaction ...	69	6	0

Profit divided by amount paid = 2·22 per cent net profit on turnover.

Surprising as this figure may seem, I feel certain that it represents the approximate *nominal* profit taken by the average retailer. It is obvious that he could not afford to run his shop on the basis of 2¼ per cent profit on turnover I doubt if anything less than 10 per cent could keep him going. The difference between 2¼ and 10 per cent must be made up in other ways. Some of these are—

(1) Selling on credit. The ordinary rate of interest charged to the working classes in Nagpur is one anna in the rupee per month (6¼ per cent per month).

(2) Mixing two qualities of grain. It is not difficult to mix two qualities in such a way that the resultant mixture seems to be considerably better than the average of the two. This is done to such an extent that it is difficult to get unmixed grain from a retail shop in Nagpur.

(3) Short measures It is a common complaint that the measures used by retail merchants are frequently smaller than the standard measure. It is also quite possible for a clever man to cheat in several other ways while measuring.

(4) Adulteration of grain by other seeds and dirt. I do not believe that this is done to any great extent in Nagpur.

In addition to the above, there is often another pair of hands through which the grain passes before reaching the ultimate consumer. Grain is frequently purchased from the retailer by petty vendors who go from door to door and to places some distance from any shop. Their profits are probably not large—slightly more, perhaps, than they could earn at day labour.

It is difficult to offer any further suggestions as to the improvement of the existing system, other than those mentioned in connection with the *ganj* and the standardisation of measures on a basis of seers and maunds. The only radical improvement possible would be to eliminate private enterprise entirely by developing a system which would enable producers to deal directly with consumers through co-operative agencies. I will show below how one half of such a system has already been developed in Nagpur and how I believe that it can be made complete.

For a number of years the Empress Mills had been supplying grain to its work people at considerably below cost In 1924 this concession was withdrawn, certain adjustments having been made in salaries by way of compensation. But the mill hands had become accustomed to receive part of their pay in advance in the form of

grain and foodstuffs, as well as to get unmixed grain and full measure. At that time the Y. M. C. A was asked to devise some scheme whereby those advantages could be retained, at little or no cost to the mills.

The Empress Mills Co-operative Stores, Limited, was organised and registered under the Co-operative Act. Shares, were fixed at Rs. 5 each and can be purchased only by mill employees and the Y. M. C. A. Welfare Work staff The Committee of Management consists of seven men, three elected by the general meeting of members, three nominated by the Manager of the Empress Mills and one nominated by the Y. M C A Such a large representation was given to the management of the mills on account of the loans which they give to the Stores from time to time. From a banking point of view, these loans are not fully secured, though all the stock is kept inside the mill compound.

The Stores were opened on the 1st of October 1924 and have grown steadily in popularity and prosperity since that time. During the first month, the sales were only Rs. 7,000. For the past three or four months, the sales have been well over Rs. 25,000 During the first nine months the profits were some Rs 7,000 though the Stores received assistance from the mills in many ways. For the next 12 months ending in June 1926 the profits were nearly Rs 10,000 and the help from the mills was much reduced. 5½ per cent interest was paid to the mills on loans received It is anticipated that profits will be considerably increased this year, as we are now purchasing less from wholesale merchants and more in the *ganjes*.

Actual paid-up share capital is only some Rs. 5,000 but shares are being sold every day. Interest on shares is paid at the rate of 6½ per cent and in addition to this a rebate of 6½ per cent is paid on all purchases by members Reserve funds are being built up considerably in excess of the amount required by the Co-operative Act There is no reason why the Stores should not continue to grow in prosperity and service to its members, provided that the buying of grain is done intelligently. Both the selling and buying of such a large quantity of grain present difficulties, but these are being solved gradually.

I have shown that one half of the problem of marketing grain can be and is being done by co-operative methods. The consumers of the Empress Mills are organised in such a way that they can buy direct from the producers of grain. The next step would be so to organise the producers that they could deal collectively with the Co-operative Stores and others This, I believe, could be done in conjunction with the already existing co operative credit societie

I will outline the scheme only briefly, since it has not yet been tried in any grain area in the Province, though it is under consideration The primary credit society in the village would collect the grain of its members, either given in repayment of loans or the ordinary surplus for sale This grain would be handed over to a sale society in some central place, where it would be properly graded. This sale society would be a department of, or at least work in close connection with, a Central Co-operative Bank. Upon receipt of the grain, the Central Bank could credit the local society with some 75 per cent of the estimated value of the grain.

The grain could be sold at once or held for a rise in the market and the selling strength of the producers thus organised would be considerably greater than it is with each one coming individually to the *ganj*. The Empress Mills Co-operative Stores, Limited, could be counted on to offer a fair price for such grain. The saving to our Stores would be considerable since we could purchase in this way as much grain in a day or two as we could ordinarily purchase in the *ganj* in two or three weeks.

Such a scheme is not impossible. One can easily point out many difficulties, particularly psychological ones. But I feel that it will be easier to start and easier to manage than co-operative credit societies. The ground has already been broken for co-operative effort by the credit societies. It is essential that the Agricultural and Co-operative Departments of Government work together if anything is to be done along these lines.

I do not suggest that there is anything new in this scheme for producers' co-operative societies. I do feel, however, that it is somewhat simpler than the usual scheme and that the presence in Nagpur of a well established consumers' society gives additional hopes for success.

I wish to acknowledge the assistance given me by Mr. D. G. Bapat, Manager of the Empress Mills Co-operative Stores, Limited, in securing many of the figures given in this statement.

MR. H. H. PETERSON.

Oral Evidence.

32355. *The Chairman*: Mr. Peterson, you are Secretary of the Y. M. C. A., and you are President of the Empress Mills Co-operative Stores, Limited?—Yes.

32356. We are much obliged to you for the note of evidence which you have put in. Would you like to add anything to it in the nature of a statement at this stage?—There are one or two things which I would like to point out. On page 442, I have shown the weight in tolas, nominal and actual. It should be understood of course that the weight of grain in the *paili* measure varies according to the quality of the grain. These are only comparative figures. If you put one sort of grain into that *paili*, it may weigh 105 tolas, but if you put another sort of grain, it may weigh more or less; these are only comparative figures.

32357. That is the capacity of the measure for the average quality of grain?—Yes, this is for the average quality of grain.

32358. Is it your experience that, as a rule, the *dalal*, if he has any bias, is more in sympathy with the buyer than with the seller?—That has been my experience as a rule, but I have learnt that it does not always happen. You will notice that I have mentioned in one place in my statement that the Nagpur *ganj* was closed for a week on account of false measures. This is a question of measures, not necessarily of *dalals* but the *ganj* was closed by the purchasers, because of false measures which were given.

32359. False measures in favour of which party?—In favour of the producer, the man who brought the grain.

32360. That looks as though the *dalal* was in favour of the cultivator?—Yes.

32361. Do you think that the market would have been closed as readily, if the advantage had been in the other direction?—I think it is very doubtful. On the other hand, I visited a *ganj* yesterday in which there are no *dalals*, and a very large number of cultivators go there with their grain, because there are no *dalals*. It is in a small village in the Bhandara district called Lakhni. It is not supervised by any one in particular; there are no *dalals* and no deductions of the usual sort are made. The grain is not spread out, as in the *ganj* here and in most *ganjes*, it is sold from the cart. The cart is quite deep and long, and the only grain which the purchaser can see is a little bit at the front and at the top, and the cartman refuses to empty it out, he does his own measuring for you. So that in this particular *ganj* everything is in favour of the cartman, the producer, and not of the purchaser. As a result of this, the prices are very low, so that it comes to the same thing in the long run.

32362. The purchaser is protecting himself?—Yes, he is protecting himself by very low rates.

32363. In the grain markets and in the municipal markets, it appears that the *dalals* are licensed?—As far as I know they are licensed in all these *ganjes*.

32364. Have you anything to say as to the manner in which the qualifications of applicants are scrutinised?—I have no information on that subject.

32365. Have you any views as to the fitness, or the reverse, of the average *dalal* for this measure of public trust?—I should think that the type of *dalal* is probably as good as you can get under the circumstances.

32366. You suggest two ways of improving the existing system of marketing. The first is the standardisation of weights and measures. How long have you been in India?—I have been in India for 10½ years, but I have not always been connected with work of this sort. I have actually had 9½ years' experience at this particular sort of work.

32367. Have you formed any view as to the practicability of this suggestion of yours that weights and measures should be standardised? Do you think that public opinion would accept it?—I think I can speak on behalf of the wholesale dealer. I have questioned quite a number of them, both in Nagpur and elsewhere, and I have found not one as yet who would object to standardisation.

32368. From what quarter, or quarters, do you think opposition would come to such a proposal?—It would come chiefly from the people who are at present doing the measuring. I should think the coolies about the *ganj*. I do not believe much

objection would be raised by any one else, except that it is a very old and traditional form of measuring Conservatism might be against it, but I believe that the wholesale merchants would welcome it.

32369. Do you think they would also welcome the change from volume to weight?—That is the particular question I have asked them; they are willing to do that.

32370. That does not necessarily mean the same thing as standardisation of weights and measures? That is the first step?—I took your first question to mean that.

32371. You think that a proposal to standardise weights and measures as such would also be well received?—It would be well received by the merchants dealing in larger quantities I do not believe that the dealer in small quantities would like to make any sort of change.

32372. Because they are accustomed to this?—Yes, and they are content, but the merchants dealing in larger quantities in several places would welcome any sort of scheme for standardisation.

32373 Could you give instances of the complications and irregularities of the existing system?—It is difficult to form any idea as to what the prices actually are, when we deal with outside places. We get a telegram saying that the price of a commodity has gone down, but unless we have accurate figures as to what their measures are, it is impossible to say what the price is.

32374. You point out that the existing practices place a premium upon dishonest dealing?—Yes, distinctly so

32375. You are associated with a wholesale firm, the Empress Mills?—My connection is this: the Y. M. C. A. is conducting the welfare work on behalf of the Empress Mills.

32376. Your suggestion is that the *dalal* should be dispensed with altogether and that the cultivators' grain should be sold by auction?—Yes

32377 Have you considered the effect of that on the amount of time that it would take to pass a given quantity of grain through the market?—That had not occurred to me, because, where it is done by auction, the process is a very rapid one. The whole auction can easily be done within 5 minutes, and sometimes less. The auction of one pile of grain will certainly take not more than 5 minutes.

32378. You see no reason why the whole business of the market should not be conducted on the basis of auction?—None at all. I want to make it clear that it is not an auction of the whole supply of grain in that *ganj* at one time, such as they have in some of the cotton markets, each lot should be auctioned separately.

32379. It is not a question of settling the general price?—No. I do not think that is possible for grain.

32380 Have you ever discussed this proposal with persons interested in the trade?—I have discussed it in Raipur with one of the large grain merchants, who is also the President of the Municipality, and he is considering the adoption of this scheme in the Raipur *ganj*. At present in the grain *ganj* in Raipur, all the sales are done privately, arranged by the *dalal*; there is no auction.

32381. You give us a very interesting analysis of the total market charges. May we take it that these represent a fair average for running such a *ganj*?—No, I should say they should be considered as mere speculation on my part I have no figures as to the cost of running a *ganj*.

32382 What about the figures on page 444, from the purchase price of 200 bags of medium quality rice in Raipur *ganj* and taking the whole of that transaction down to the end of the wholesale stage?—These figures should be taken as typical of an average purchase and shipment and sale of grain, as worked out from our actual figures. The former figures about the cost of running a *ganj* are merely speculative, but these figures are based on our actual accounts They do not represent any particular purchase that we have made, but are a sort of average.

32383. You show at the end of the transaction a profit of Rs. 117-8-1?—Yes.

32384. Is that the gross profit?—Yes. I have taken out of the total one or two items, such as the cost of the merchant's journey to Raipur, the rent of his warehouse, salaries of servants, etc. I believe these figures represent, as accurately as is possible, the cost of the whole transaction.

32385. Then you point out that on a rising market the wholesaler is able to make very considerable profits, while on a falling market he may suffer a heavy loss. In your experience, which branch of the distributive trade usually gets to hear of a prospective fall first?—The wholesale dealer.

32386. Are they very often left to carry a loss?—More often than one would suspect; the retailers follow the wholesale prices very closely. Our co-operative stores have suffered loss time and again, and at other times have made a somewhat inordinate profit.

32387. Then you take us to the relations between the retailer and the consumer, and you show the retailer makes the extraordinarily low nominal profit of about 2½ per cent on turnover. You rightly point out that no retail business could be conducted on that margin. Turning to the figures you give at the top of page 445 the total amount paid to the wholesaler by the retailer is Rs. 3,130-10-0 and the total amount received by the retailer from the consumer is Rs. 3,200?—Yes, except that the amount paid represents not only the amount paid to the wholesaler but other charges, some of which are paid to coolies and so on. It is the total cost.

32388. It is the amount paid to the wholesaler, *plus* these incidental charges?—Yes.

32389. Then you explain the mystery by giving a list of practices which, for the most part, are improper?—Yes.

32390. Are you convinced that those practices really afford the explanation of how the retailer makes a living on this apparent margin?—These are certainly the chief means used by retailers to increase their profits. There may be others I have not yet discovered.

32391. The general suggestion you make is that there should be a tightening up of the control over markets. You could not achieve the change from the present practice to that of auction without some control?—The question of standardising and fixing weights must certainly be taken up by Government, no one else can do that. I am not prepared to say Government should step in and compel people to sell in one way or another.

32392. The municipal committee, or whatever body controls the market, must agree to this change?—Yes.

32393. Do you think the cultivator is represented at all on the average market committee?—I have no information on that point.

32394. Can you think of anyone on the municipal market committee here who could fairly be said to represent the cultivator?—As a matter of fact, I do not even know one member of it.

32395. The Commission had this morning the opportunity of seeing your consumers' retail co-operative society which you describe in your note. Have you a committee of consumers to help you to manage that society?—We have only one committee in our stores, made up as follows: 3 members elected by the members of the society (all of whom are consumers), 3 members nominated by the manager of the Empress Mills and one member nominated by the Y. M. C. A. The quorum is so arranged that no business can be transacted unless at least one mill hand is present.

32396. Could you give us an idea of the wages of the mill hand members?—All three of them are in the superior (not the managerial) grade. One is a clerk in the office, getting about Rs. 45, and the other two would earn about the same amount. They are leaders amongst the men, men of standing in the mills and were chosen entirely by the mill hands, who were not influenced in any way by the management. The men have, as a matter of fact, chosen extremely good representatives. All three know a good deal about the grain business.

32397. Then you make a suggestion as to the manner in which consumers' co-operative societies might link up with producers' societies. Do you think there is a conflict of interest between the two?—I am not an expert on the subject, but it seems to me commonsense to believe there is bound to be some conflict.

32398. One is anxious to sell as dear and the other to buy as cheap as possible?—Yes. I understand the International Labour Office has made a study of this question; I have just received their report on it, which I have not yet had time to read. It is evidently recognised as a serious problem elsewhere.

32399. Where do you get your grain from?—Most of our rice comes from the Chhattisgarh Division. We buy a large percentage of it in Raipur. Wheat comes from almost anywhere round Nagpur, we do not have to go far from Nagpur for wheat. As far as possible we send our own purchaser to the *ganj*, he picks out the grain he wishes to buy and arranges with the local commission agent to pay for it, take charge of it and ship it to Nagpur. The commission agent then sends us a *hundi* covering the amount.

32400. Do any cultivators bring their grain direct to you?—Not as yet.

32401. Would you encourage that?—We would be only too glad if they did it but I do not think it is very likely unless we open a purchasing shop in the part of the city to which they ordinarily come.

32402. Have you any organisation for promoting thrift amongst your members?—Not as yet.

32403. *Mr. Calvert*: Have you come across instances where the rate quoted has been a false one, such as where Rs. 3 a maund is quoted but that maund is 42 seers instead of 40?—The Nagpur unit is the *khandi*, which is approximately 5 maunds. At Bhandara, however, they also use the *khandi*, but it is of a different size. Is that what you mean?

32404. Do you have cases where the seller does not know what the actual *khandi* is, he thinking it to be one thing and it actually being another?—That is likely to happen if he does not know the measurement of the unit used at a particular place. You cannot make a comparative list of prices by showing so much a *khandi* in Raipur and other places, you must first transpose the various *khandis* into some standard measure.

32405. Some men may quote Rs. 3 a *khandi* and some Rs. 3-1-0, are there cases where a man will sell at Rs. 3-1-0 and then find the *khandi* quoted for is different from the other?—In comparing prices in different parts of the Province it is necessary to know the local *khandi* used but here in Nagpur only one *khandi* is used. It may vary according to the way it is measured, but there is only one standard for Nagpur.

32406. Is that strictly adhered to?—Nominally. There may be cheating at the time of measurement, that is all.

32407. We find a maund varies according to whether a man is buying or selling; it may be 35 seers in the one case and 42 in the other. Do you come across cases like that?—If you are referring to false measures, you will find plenty of those in Nagpur; but in any *ganj* controlled by the Municipality the measure used must have the municipal stamp on it, so that the actual measure used is not false, though no process of measuring can be guaranteed to be accurate if a clever man is using it. Of course, the process of measurement is not a difficult thing; the actual measurement is nothing if you have a clever man doing the business.

32408. Have you carried your investigations into the actual weights used in any market?—These are given here on page 442.

32409. About the actual measure of weight, not your standard weight?—We do not use the standard weight at all; the unit is always one of quantity and not of weight; I have not looked into the question of weight at all.

32410. On page 415 with regard to the means whereby the retailer increases his income, do those relate to a shop in a town dealing with mill hands?—I was thinking of the ordinary shop in Nagpur and of course a very large percentage of the population in Nagpur is connected with mills.

32411. You have not really carried your investigation into shops dealing with ordinary cottage workers?—No, it is based on Nagpur experience.

32412. Do you know anything at all about the condition of cottage workers marketing their produce?—No, I have not gone into that.

32413. *Sir Henry Lawrence*: Is there any machinery for examining the weights and measures which are in use in the Municipality?—As regards weights I am not able to give any information, but the measures used in grain bazars have a municipal stamp. They are made according to certain instructions and a municipal stamp is put on them and these official measures must be used in the *ganjes* and in the markets controlled by the Municipality.

32414. Is there any means of tampering with them?—You cannot easily do it, because they are curved up a little bit at the bottom and it is very difficult to tamper with them. The measure gets smaller towards the top than at the bottom It is said that they can put up false bottoms but I think it is somewhat difficult to do so I do not think the municipal measures are tampered with, but there is no law that a merchant in his own shop should use municipal measures

32415. Do you advocate such a law?—I think it would be a very good thing; all measures used in measuring grains should be municipal measures.

32416 Have you any annual inspection of weights and measures enforced by law?—There may be a law, but I know it is certainly not enforced.

32417. *Sir S. M. Chitnavis*: There is a Market Overseer?—Yes. But I know that the ordinary shop does not use the municipal measure, or, if it does, it will have a spare measure to use when the shopkeeper thinks that the customer does not know the difference.

32418. *Sir Ganga Ram* You say that the grain is brought as far as 100 miles; are there no *ganjes* within these 100 miles?—There are parts of the Province where there are no *ganjes* for 100 miles.

32419. Are there really no *ganjes*?—I have no definite information.

32420. What do you think carting 100 miles would cost them?—I have no idea.

32421. Roughly, how much a maund would the carter charge?—I am afraid I could not furnish you with a figure of that sort.

32422. How would you auction? Per maund, per heap or per bale?—If the maund is taken as the standard measure then the auctioning would be done at so many rupees, annas and pies per maund.

32423 You do not auction the heap?—No

32424. *The Chairman*. I think you were definitely of opinion that the measurement should be one of weight?—Yes, but the auction should be done, no matter what the standard is. I am definitely of opinion that measures of weight rather than of quantity should be used, but there is no way to auction a heap for so much when you do not know what is in the heap

(The witness withdrew.)

Rao Sahib G. N. SAHASRABUDHE, Pleader, Ellichpur, Amraoti District.

Replies to the Questionnaire.

Introduction.— I am a pleader practising in the Courts at Ellichpur for the past 42 years. During the course of my profession I came across many *Kunbi* clients who generally form a major portion of the litigant population. I am watching their condition and the condition of their lands in Berar. I was a Vice-Chairman of Ellichpur Civil Station Municipal Committee for 18 years and I was Honorary Secretary of the same for 8 years. As Vice-Chairman, I had connection with primary and secondary education and I was a Manager of the High School at Ellichpur which was opened there by the Municipal Committee on 1st of July 1914.

I was President of the Board of Directors of the Berar Match Manufacturing Company, Ltd, started in 1908

I appeared as a witness before (1) the Indian Industrial Commission, (2) the Fiscal Commission, and (3) the Indian Taxation Enquiry Committee, and I had submitted replies to the questionnaire issued by the Indian Economic Enquiry Committee but was not examined for want of time

I am myself an owner of some lands at Kandli and I have planted about 350 grafted mango trees long ago.

While studying agriculture I have formed an opinion that Government officers, (1) Lord Curzon, (2) Professor Voelcker, (3) Lord Willingdon, (4) Sir James MacKenna, (5) Dr Clouston, (6) Sir Frank Sly, and others have performed good services to the country but there is still left ample scope for improvement in agriculture. It is hoped now that the further progress in agriculture will result in practical benefits to cultivators, so that they will be free from indebtedness and will receive increased production. When this will be accomplished there will be a really happy and contented rural population

My proposed scheme will indeed create cheerfulness and activity all round amongst village people.

In short, it is desirable that India should not lag behind all civilised nations of the world in all branches of Administration under British rule.

QUESTION 1.—RESEARCH.—The question of bettering the co-ordination between the several Governments in India and the Government of India is a comprehensive one and might concern all departments in India. But it seems that I should confine my remarks regarding research to provincial research work alone

The Government of India has already appointed an Agricultural Adviser to the Government of India who controls and supervises the work of provincial research or experimental officers.

But the general feeling amongst the provincial officers seems to be that they are independent officers and that their provincial work should not be interfered with by any superior officer Every provincial department wishes that they should be independent and that they will do what they think fit suitable to the special conditions of the Province. Similarly in the case of the Veterinary Department, the necessary serum is prepared at the Muktesar Institute probably from the hill cattle and is forwarded to the Veterinary Officer at Nagpur or Amraoti.

When the provincial reports are received at the Pusa or the Muktesar Institute, all reports should be examined at Pusa and the results compared with the Pusa Research Institute Afterwards a meeting should be convened at Pusa to which all provincial officers, agricultural and veterinary, should be called to attend the meeting. A free and full discussion should take place on all reports and conclusions arrived at, with the consent of all officers. A consolidated report should be submitted to the Government of India and orders should be issued accordingly. This procedure will improve matters and relations and the Government of India should help to carry out these suggestions.

In this case there will be no necessity of forming any Board for this purpose.

There are already Superintendents appointed in the Veterinary Department and there is no necessity of retaining an advisory veterinary officer.

Independence of Provincial Governments and officers should be retained, subject to the control and direction of the Government of India in urgent cases only.

The Research Institute at Pusa is rendering excellent services to the country and should be developed as far as possible.

R. S. G. N. SAHASRABUDHE.

QUESTION 2.—AGRICULTURAL EDUCATION.—(i) The agriculturists in Berar were simple in habits and living, and foodstuffs of daily use and other articles were cheaper and therefore they used to maintain themselves easily in old days. But dazzled by the Western civilisation they became extravagant, the cost of living was increased owing to the Great War and they are now reduced to a miserable condition. Productive power of the land was not increased along with the increased expenditure and consequently they have fallen into heavy indebtedness.

These conditions were observed by Professor Voelcker. The necessity of imparting scientific education was emphasised Lord Willingdon, the late Governor of Bombay, in his opening address delivered in the Agricultural Conference held at Poona in 1917 also spoke in the same strain which shows the nature of education to be imparted in the schools So that the question of agricultural education was before the Government of India for the last twenty years but nothing substantial was done in the matter From the table on page 455 it will be seen that out of the whole agricultural population only 380 were receiving agricultural education in six schools in the whole of British India

(ii) It is hoped now that something will be done and the Government of India will be pleased to establish as many schools as possible and encourage the establishment of compulsory primary schools by allotting substantial contributions and subscriptions to the District Boards and Municipal Committees and thus encourage education without any further delay. There are ample funds in Berar, land revenue itself amounts to Rs. 91,0 ,000, out of which only Rs 6 lakhs are spent by the Agricultural Department. Giving contribution as usual to the Central Government the balance may be utilised by Government for the good of the Province of Berar alone.

(iii) For the establishment of agricultural vernacular middle schools it is necessary

(*a*) That the curriculum of the primary schools of general education must be embodied so as to include some teaching which will create agricultural and industrial bias in the minds of boys, and

(*b*) that gardening should be taught. A small plot should be given by Boards for use of boys made to work actually in the garden just like coolies

One Mr Shanker Laxman Vaidya of Poona, who is a Professor in the Poona Training College, has written a book on gardening which would make a good text-book and should be introduced in the curriculum by the department.

(*c*) The curriculum of the Loni school is an excellent one which will train the sons of a landlord into a good practical man able to manage his own lands. But competent teachers will be required to teach the subject. No such teachers will be available for the present. The Agricultural College may provide some teachers, if necessary, but even after coming out of the college the students must have some practical course for one year when the instruction must be given in vernacular because they shall have to teach boys of the agricultural school in vernacular The boys do not know English Entrance qualification is only the passing of the 4th vernacular standard These schools should be under the control of the Minister for Agriculture. A special Agricultural Inspector should be appointed to inspect the schools The schools should not be placed under the control of the Director of Public Instruction.

(iv) As there is a Training College at Akola and another at Amraoti in Berar where teachers for the primary schools are prepared, so there must be established at least one agricultural training school in Berar which should train teachers, who should be competent to teach the students of the vernacular middle agricultural schools.

A model agricultural school was exhibited in the Poona Agricultural Show which deserves consideration

(v) In Berar there are at present no schools of agriculture worth mentioning. There are primary schools opened in villages by Boards which are attended by *Kunbi* boys but the general tendency is to avoid going to school.

(vi) As Vice-Chairman of the Ellichpur Civil Station Municipal Committee, I was a manager of the primary school and the Anglo-vernacular high school at Paratwada. Last year I paid casual visits to some of the Government and Board schools in Ellichpur and Daryapur taluks. My object was to see whether any attempt is made in the school to create an industrial or agricultural bias in the minds of young boys. But it is regrettable to note that no such attempt is made. I had a good deal of discussion

with masters but they said no value is attached to this sort of education by their superior authorities and hence no attention is paid by them. From my experience I think that educational authorities do not pay much attention to industrial or agricultural education.

The rural people may be made to take interest in education (1) by being shown successful demonstration by which they will be profited or their production per acre will be increased, (2) by being given the advantages of education, (3) by their knowledge being kept intact until they attain 18 years and thus become educated electorates, (4) interesting books in a library or reading room being read out to them, (5) by constant touch with agricultural officers one of whom at least should go in the village and mix with them freely, and (6) by being brought in contact with educated people of their own caste who should be models before them. In short they must be in touch with educated people who should always live in the villages. I visited many villages and I found them always in despondency and disappointment with no merrymaking or any common sports or amusements

I have therefore suggested a change in the organisation of the department as shown in the diagram in Appendix XI* attached herewith in which I have attempted to show at a glance all that is needed by an agriculturist. Everything is at his door. The agricultural agent has his residence with all his manures and implements all these primary schools, agricultural schools, dispensary, veterinary dispensary, police station, demonstration farm, etc.

If my proposal is carried out, agricultural officers will be always going there. Also the Deputy Commissioner, Commissioner, Tahsildar, School Inspectors, Director of Public Instruction, etc Even the Minister for Agriculture and Education and His Excellency the Governor might one day pay a flying visit to the village. I have selected Pathrot, a village of 6,000 souls with good lands approachable even by motor even in a rainy season. Another place is Deurwada, some distance from Chandur Bazar. I have purposely selected this village which has got a good sacred river—Purna—a complete village scene and life Roads are village roads and will require repairs Officers may go casually by riding on their horses and ponies There would be no motors which though good and speedy are making people lazy Walking has become tiresome to them which is not a good sign There are 20 buildings to be erected but they should be built model houses and no costly buildings are required Lands of farmers themselves are taken up by Government for demonstration purposes on certain conditions and they should be convinced of the successful working of methods of profitable production when they are sure to adopt them. This is the way to improve agriculture and make the people to take an interest in education and to be happy and contented. I will add more buildings for the office of the village Co operative credit societies would advance money at a small rate of interest. Unless something attractive is done, no improvement will take place.

At first an experiment may be made in two villages of each taluk. Kapustalni and Pandhri near Anjangaon may be selected in Daryapur taluk. There are 22 taluks in Berar but one or two villages only may be taken first in the whole of Berar.

The Compulsory Education Act is passed by the Central Provinces Council and is in force in Berar Some schools of this kind have been opened in Berar but the attendance of boys is not yet satisfactory. I examined the compulsory educational schools opened at Karajgaon and Shirajgaon in Ellichpur taluk and at Itki in Daryapur taluk in December 1925. They have been financed by the District Board and some of them are in good condition. On enquiry I found that the objection of the people to send their boys to schools is that they lose their wages and thus they are put to pecuniary loss. I thought over this question and I propose the following amendments: –

(1) That the admission age should be raised from 6 to 11 to 10 to 13, both inclusive

(2) That the school should be held only in the morning from 7 to 10 a. m.

(3) That four Sundays in the month and on all Hindu holidays the school should be closed.

(4) That the school should be closed from 15th November to 15th March for *kangam* season when the boys get good wages.

(5) No vacation for hot season allowed but boys should attend school from 3 to 6 p.m.

(6) In these primary schools only the 3 R's and writing of their own signature should be taught.

---

*Not printed.

R. S. G. N, SAHASRABUDHE.

By this system boys will attend the school and will as well get their wages. All the people will be satisfied.

That libraries and reading rooms should be established in villages. Government help is necessary.

The following table will show the number of agricultural vernacular middle schools in the different Provinces of India* :—

Name of the Provinces.	Institutions.	Scholars.
1. Madras	2	44
2. Bombay	5	134
3. Bengal	2	56
4. United Provinces	1	33
5. Bihar and Orissa	1	79
6. Central Provinces	2†	34
Total ...	13	380

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—Experimental and demostration farms in Berar

There is one experimental farm at Akola and two demonstration farms, one at Yeotmal and the other at Basim. One seed farm is at Boregaon. There is one cattle-breeding farm at Boregaon It is doubtful whether these farms can be carried on on a commercial basis As for experimental farms, it must be admitted that they are just like laboratories and they cannot be carried on profitably. But demonstration farms in which demonstrations are made of these methods only which have proved successful in the experimental farms may be carried on on commercial basis. Otherwise the Indian cultivators will not follow them and the money will be uselessly spent. This question was discussed in the Conference of the Board of Agriculture held at Bangalore in 1924.

The Maharaja of Mysore and Dr. Clouston are also of the opinion that the "financial aspect of these farms is a secondary consideration. They are like field laboratories." If this is the case we cannot expect ignorant *Kunbis* to follow the methods demonstrated on the demonstration farm.

So the question of bearing the burden of these farms is worth consideration I wish the department will submit to the Commission any statistics that may be in its office which will show the effectiveness of these farms to the farmers and showing the number of people who have actually taken advantage of the methods and benefited themselves accordingly. If such statistics are not forthcoming, then it is difficult to say how far the money spent on these demonstration farms has been spent for the benefit of the Indian cultivators. If these farms are useful in some other way, of course they may be continued In the Bombay Presidency, the Deputy Director of Agriculture of the Nasik Division reports that in one demonstration farm in his charge the expenditure incurred was Rs. 51,000 and the income derived was Rs. 58,000. Such figures should be shown in the reports of the demonstration farms in Berar.

I do not know of any measures that will make the farms successful. In my opinion, they are not profitable and the department ought to be in a position to show the effectiveness of these farms on the minds of the rural people If statistics of effectiveness are maintained, they will throw some light on the subject.

*Please see Quinquennial Report on Education for 1917 to 1921, page 163.

†One school has been closed recently.

R. S. G. N. SAHASRABUDHE.

Valuable resolutions are passed in conferences of the Board of Agriculture, etc., but they being in English are of no avail to rural people These resolutions are not brought into action and the people do not know anything of them and they are of no use to rural population. They are useful to departmental officers and other English-knowing people. The question arises of what practical use are these conferences to Indian farmers. Conferences are held at a great cost of hundreds of thousands of rupees per year. Most of the resolutions passed are a dead letter. Huge reports are printed and published in the country and this too at a great cost. It is not known why Government of India did not take any action on the resolutions passed in these conferences. I request the honourable members of the Commission to think over this matter. Merely passing resolutions will not give supply of manures to poor agriculturists at a cheap rate in their villages nor will they be improved by the apathy of Governmen in this respect.

The same is the case with the departmental resolutions. All of them are no translated into vernacular and not freely distributed amongst the villagers gratis. Departmental officers should understand that they are teachers of methods of cultivation and other methods of rural people who do not know English at all and whose language is Marathi, Urdu, Telugu, Kanarese, etc., so that unless books and pamphlets are translated freely and distributed gratis how do they expect them to learn new knowledge for them. I do not mean to say no distribution and translation is made at all but what is done is insufficient looking to the number and extent of the rural people in Berar and in other villages of India Propaganda work is generally the most important work to be done by the Agricultural Assistant and other officers.

Sir James MacKenna's Review of the decade is very useful. At least in the last pages of the Review he has passed the following remarks.—

"Let the motto of the department be Sympathy and Co-operation."

"Its one great aim being to work with the people and for the people and for the people's good."

The above sentences contain the real policy of the department.

English and American methods of propaganda work are praiseworthy. I received 52 agricultural pamphlets from the United States Department of Agriculture gratis. But that department spent about one rupee postal charges. The pamphlets are valuable and interesting. This shows that American Department of Agriculture is generous enough to do propaganda work even in foreign countries

This English and American ideal should be followed in India.

I appreciate the propaganda work done by the Central Provinces and Berar Agricultural Department. Mr Allan, the officiating Director of Agriculture, is entitled to many thanks from Berar farmers for arranging a special train on concession rates for conveying Berar agriculturists to Poona Exhibition which was the greatest exhibition ever held in India.

My thanks are due to the department for kindly distributing at Badnera railway station my 700 industrial pamphlets gratis to all Berar agriculturists that went in the special to see the Poona Exhibition.

QUESTION 4.—ADMINISTRATION.—This is an important question, for the condition of the Indian agriculturist depends upon the way in which the question is solved The question is whether the Indian farmers are satisfied with the present agricultural services. At the outset I rely on the following quotation from the report on the "Introduction of improvements in Indian agriculture". The quotation is, I think, most important and should be borne in mind while working the department. It runs thus:—

"The essential difference between the agricultural departments in the East and in the West is that the latter have arisen to meet the spontaneous demand of cultivators of the soil, whereas the former have lately been created by a bureaucratic Government anxious to give all assistance it can to its agricultural subjects. The demand for improved agriculture has not in India, except in special cases come from the cultivator. While therefore in the West the cultivator is naturally in direct touch with the Department of Agriculture, in India it is necessary for the department to put forth every effort first to ascertain the needs of the cultivators and then to demonstrate how they can most effectively be met".

Any circular issued by the head of the department must be so framed as to meet the above conditions. The methods and arrangements followed in the West are of us use in the East on account of differences in tendencies and mentalities of the farmers.

R. S. G. N. SAHASRABUDHE.

The above view was the guiding spirit of the report published in 1892 and this view was before the first Viceroy who established agricultural departments in India in 1905. I do not know what organisation circulars were issued by Government for the guidance of the departmental officers in working out the department. The first circular that I came to know was issued by the department in the Central Provinces in 1922. I have read the circular very carefully and it embodies some spirit and the object contained in the above quotation. A review of agricultural operations during the decade from 1905 to 1916 has also been published. It contains the real progress made during that decade. By reading it one is impressed that the achievement of the Agricultural Department seems to be (1) distribution of good seed of various crops through agricultural associations, (2) distribution of improved implements, and (3) teaching of various new crops for production.

The above achievements are in some ways satisfactory. But they are insufficient considering the period and amount of money spent on it. Experimental and demonstration farms have done some good, but as regards scientific production of increased crops nothing important seems to have been achieved. Speaking for Berar, I can say that poor *Kunbis* are cultivating their ancestral lands by their traditional methods and implements and produce just sufficient for the maintenance of their family. But now the times are changed. Foodstuffs and clothes, etc., have become very dear, new attractive articles are poured into the country to which they fall victim. Hence they want more money, and teaching of improved methods of profitable production should be the sole aim of the department.

I have given the methods of extension work done in America. The teaching of boys and children can be done by assembling them in one building called a school. The agricultural officers are in fact teachers of the methods of production in fields. Farmers are not expected to assemble in one building, but officers must visit their houses and their fields and give them new knowledge and teach new methods The officer must remain in the village and see the fields and watch all operations and show them the methods by his own hands.

People are not educated, and hence teaching by correspondence is not much resorted to in India.

The agricultural officers must feel that they are teachers, and that they are to prepare the people to work as good farmers, but at present that is not the case. The officers expect agriculturists to come to their offices and learn lessons from them. Their attitude towards the general public is not satisfactory. In Berar, this year there was too much rain in September and insects had attacked leaves of cotton plants. I doubt how many agricultural officers left their offices during this period and ran to villages to give relief to people Drainage of fields and other remedies to remove water could have been suggested. Secondly, there was a long break in October. For this inter-cultivation or other methods could also have been suggested, but as there are no statistics showing the officer's visits to villages during this period, one is at a loss to know whether the people in villages get any help from the officers To do real work people must be reached. It is by their contact and association that the rural people will be improved Some educated people must also go and live in villages Then, and then only, they will know the needs of the people. Reorganisation of the village is necessary. People must be made merry, happy and contented.

Railways.—The railway companies should reduce the inland rates of conveying rural produce from one place to another They should give facilitеis by opening branch railways and by opening up communications to villages for passengers and goods traffic. Now that the railways are managed and brought under State control, there will be no difficulty in meeting the wishes of the people. Transport facilities should be offered as far as possible.

Roads. - If my scheme is approved village roads will have to be put in order. At present the condition of roads under District Council control is not satisfactory. No attention is paid to the conveniences and comforts of the rural population. The District Councils must spend money supplemented by Government contribution. Recently the Road Improvement Project Committee has been appointed by His Excellency the Governor of the Central Provinces and greater attention is now paid to the extension of road facilities throughout Berar This is a satisfactory feature. In this way, if all roads joining villages are thoroughly repaired, the troubles and hardships of farmers will be lessened to a great extent.

R. S. G. N. SAHASRABUDHE.

Postal and Telegraph Departments.—These departments are the best managed departments in the whole of India. They in fact look to the public convenience and comforts—an ideal which is in force all through in England and America. The other departments should have the same ideal in view. I think this subject requires serious consideration as all the agriculturists are concerned therein. It will be better if this ideal is followed by the Department of Agriculture.

The assemblage of various facilities as shown in my suggested scheme (*Appendix XI) with good and passable motor roads will draw many people from their homes to see this novelty through curiosity, and if the demonstration methods shown there prove successful, the news will be taken to other villages and usefulness of the institutions will be known to all Some intelligent spectators might get the idea and try the methods in their own fields In this way the utility of the novel scheme shown in the drawing might be familiar to all directly and by indirect methods.

Meteorological Department.—The science of meteorology is not much known in the country, though a Government meteorological observatory is maintained at Colaba, Bombay.

Observations are taken daily and are published in the *Times of India*, Bombay.

I was elected a fellow of the Royal Meteorological Society, London, in 1911. During 1911 I read many publications and books on the subject, from which I think a great deal of attention is paid to this science in England Weekly lectures are delivered and reports are published From the descriptive notice of the prospectus of the Society it seems that a large library of the Society is maintained in London which contains about hundreds of thousands of books on this science.

Atmospheric conditions are observed from which the officer in charge of the observatory at Bombay can foretell rains, storms, cyclones, dust storms, etc. Use can be made of the science by the Agricultural Department. The Agricultural Department might get intimation from the Bombay observatory as to when it is likely that there will be rainfall, dust storms or cyclones and when such intimation is received the Agricultural Department may give notice of this intimation to the agriculturists of the Province. So that they will be on guard and try to carry out agricultural operations beforehand and thus save the crops from being damaged by rains or storms.

I do not know whether the Agricultural Department in this Province and other Provinces of India are in touch with the observations made at Colaba, Bombay I think statistics of every day rainfall should be maintained in the offices of the Director and Deputy Director of Agriculture.

I think popular lectures on the relation of agriculture to the science of meteorology will be welcomed by the rural population. This may form part of propaganda work.

QUESTION 5.—FINANCE.—Agriculture is an industry and every industry requires financing. So financing is a very important question. When we start an industry we first make arrangements for supply of capital which is required for these purposes:—(1) For purchase of land and for building, (2) for the purchase of the necessary machinery and (3) working capital for carrying on the business Let us see how far the agriculturist cares to see that these requirements are fulfilled. He has got lands from his ancestors and has also got some machinery, implements, tools, etc., and one pair of bullocks So that the first two requirements are fulfilled. He requires no money. But he wants capital for carrying on his cultivation business and for the support of his family and to feed the pair of bullocks which he gets from his father. He sees that he has got some *juari*, *khandi* or so and a few *pullas* of *kadbi*. He does not care to see whence money could come for cultivation expenses for the purchase of the seed, etc The need for money comes ahead and he begins to search for it. He thinks that he is a cultivator and there is no other profession to follow excepting his ancestral trade. So he submits to his lot and goes on.

The following are the agencies who supply him with funds:—

(1) The *Mahajan* or the village moneylender.

(2) Government *taccavi* advances sanctioned every year.

(3) Banks (modern).

(4) Co-operative Central Banks or credit societies of the village.

* Not printed.

R. S. G. N. SAHASRABUDHE.

The *Mahajan* or moneylender is generally a man who maintains himself by this profession. Marwaris are generally very shrewd people and they have got the knack for earning profits. Many Marwaris have come down and settled in Berar and have now become landlords of hundreds of acres of land. Poor people are driven to borrow money for cultivation expenses at a high rate of interest and pay also *balajee* and *dhorne* and other charges. When the crop is ripe for cutting, the moneylender sends a man to watch the crops on which he has got the first charge. When the harvested cotton is ready for sale, the moneylender takes the cart laden with cotton to the nearest market and sells it and out of the sale proceeds the debts due are first cleared with interest and other charges. The accounts are made up by the Marwari and the poor man simply nods his assent and goes with some balance in his hand When he comes home he thinks of purchasing some *jawars* or clothes for his children and his wife and the whole balance is spent In the meantime the village *Mahar* comes and asks the man for the payment of Government assessment of land. The poor man asks him to wait but the *Mahar* replies that if the money is not paid by the 15th of February double the amount of assessment shall have to be paid. The *Mahar* goes away and returns the message to the *patel*. The poor man again becomes anxious and fearing the penalty again goes to the Marwari and begs of him to pay the assessment amount. The Marwari with reluctance pays off the amount to the poor man but warns him that he shall have to pay 3 per cent per mensem interest with compound interest if not paid in time. He submits in order to pay the assessment and somehow satisfies the Government servant. In the meanwhile litigation, marriage festivities and amusements such as an Indian circus at Paratwada when his children are after him demands his attention. In this way the days pass on when again the time of summer cultivation operations come on and money is again needed for the purpose.

The agriculturists are thus involved in debt and the Government is trying its best to remedy the evil.

The Co-operative Central Banks and co-operative credit societies have been established for their help and they are helping the poor people to some extent. I am a Director of the Central Co-operative Bank, Ellichpur, and I know by experience that a considerable amount is advanced every year at the small rate of interest of one per cent per annum but even this rate is too high. But I noticed one defect in the administration of the Bank. No strict supervision is exercised by the village societies as to whether the money advanced as a loan is really utilised for the improvement or use of the lands for which it is advanced, or, for instance, whether it is spent for building a house or for purchasing a grinding mill

Taccavi loans are advanced by Government every year through Tahsildars. But the procedure followed by Government is a tedious one and it takes a long time for the money to come into the hands of the applicant. The procedure should be abolished and a special officer of the status of a University graduate (many are available) should be appointed on a decent salary for distributing the amount to respective applicants by going to villages or to a central village which is in the centre of a group of villages This will be a convenient arrangement and people will be fully satisfied He should also be asked to pay surprise visits to various villages and ascertain whether the money is really applied to the land. If the work is found insufficient to engage his whole time, some other office work may be given to him.

Short-term mortgages are not good for these ignorant agriculturists, appointed time goes at once and the land passes in the hands of *Mahajans* very soon. Long-term mortgages are better, but the debtor must be careful and see that the payments are regularly made to the moneylender.

In short, it is very difficult to save the farmers The habits of thrift and economy must be developed and to attain them education is very necessary. It is said that land mortgage banks should be opened but, in any case, the management should rest with an agriculturist who should be a shrewd, careful and educated man. But after all Government must help and advance money freely at a small rate of interest and help the Co-operative Central Banks by advancing them as much money as will be required. But in the end the cultivators must themselves be careful and must develop habits of thrift and economy.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—The causes of agricultural indebtedness in Berar are as follows:—

(*a*) Ignorance or want of education.

(*b*) Less production of crops per acre.

(*c*) Want of thrift and economy and practical common sense.

R. S. G. N. SAHASRABUDHE.

(*d*) Litigation, marriages, etc.

(*e*) Prompt payment of land assessment on a certain date.

(*f*) Heavy assessment on revision.

(*g*) High rate of interest and compound interest.

The question of agricultural indebtedness is very difficult of solution For many years indebtedness has been increasing but the agricultural community itself is not minding it. Moneylenders, though they are of some use to them, are unkind and unsympathetic and are very much inclined to exact money from cultivators having an eye upon their landed property. A Marwari who came with a *lota* (brass pot) and bedding in his hand to Berar from his country has now become, within the space of 40 years, a big landlord (owning 500 or 600 *tiffans* of land equal to 2,400 acres) paying a land revenue of Rs. 5,000 per year. In this way almost all lands have passed from poor cultivators to moneylenders, some of these might represent the case of a Shylock of London. This is a great evil and attempts are being made by Government to save the farmers from the clutches of *sowcars* and no success is obtained as yet. Though these legitimate landowners are themselves ignorant we should try to save them.

Co-operative Central Banks and village credit societies have been started and are rendering valuable help to the cultivators. Money is advanced by them at a certain rate of interest but the rate of interest must be still further lowered in order to attract the cultivators to these banks. There are about 18 Central Banks in Berar and I have had the experience of being the Director of the Central Bank, Ellichpur. A good sum is advanced to the *Kunbis* every year, but repayments are not made regularly owing to diminished production of crops every year.

The present year is again short of crops just like last year which was also a year of short crops. Consequently lakhs of rupees remain unpaid to Central Banks. Again there is a complaint of shortage of crops owing to want of rain in October.

One defect I have observed in the working of these societies is that no supervision is exercised either by the village societies or Central Banks or the Agricultural Department as to whether the money is appropriated for improvement of the land. The Government should pay attention to this.

Education is the only remedy. However Government may pass necessary laws lowering the rate of interest and prohibiting compound interest and passing a Moneylenders' Act as in the Punjab. There is no use restricting alienation of lands. The condition will be worse as is the case in the Central Provinces.

There is the Insolvency Act in force. The *Kunbis* who are indebted to an extent greater than the value of their property always, put in applications in the Insolvency Courts to declare themselves insolvents. No separate village insolvency law seems necessary.

The present law relating to mortgage already gives ample facilities to the defendant mortgagor to pay off the money and redeem the mortgage Notices are issued to show cause why the lands should not be foreclosed. More time is again given to accommodate the debtors and the courts are always lenient towards the mortgagors with a view to save their property. But they do not imagine the results of their own acts and when the property goes away they repent.

The departmental officers must teach scientific methods of increased production. The rainfall must be regulated by investigating the causes of the shortage of rainfall. In short education is the only remedy.

The establishment of land mortgage banks for advancing long-term loans is a remedy suggested by some people. But even in this case if a cultivator is not educated he will squander money when crops are good, and when he has in any year a small yield he will be unable to pay the instalment. The banks should manage the lands and recover the loan in instalments within a period of twenty years. But is this practicable?

QUESTION 8.—IRRIGATION.—(*a*) (iii) Well irrigation in Berar.

(1) Berar is a small compact Province, with a population of about 3,000,000 of people. It is mainly an agricultural country. The people are intelligent but are not educated except in the case of the higher classes. The soil is fertile, and with a good and timely monsoon it gives a bumper harvest. The peasantry is hard-working but is involved in terrible indebtedness.

(2) The needs of the Province are—(1) Good seed; (2) good tillage; (3) a cheap supply of manures which should be within the easy reach of a poor cultivator of four or eight acres of land; (4) money help at a cheap rate of interest; (5) good and timely rainfall; (6) facilities for marketing.

R. S. G. N. SAHASRABUDHE.

(3) The crops grown are :—

1. Cotton, (2) *juar*, (3) *tur*, (4) *til*, (5) hemp, (6) linseed, (7) wheat, (8) gram. Even the Melghat, a hilly tract of Satpura hills lying towards north of Ellichpur, produces (1) cotton, (2) gram, (3) wheat (4) potatoes. The land is reddish and good.

(4) There were many gardens and orchards in old days in Berar. But the number is now reduced owing to high rate of cotton and the evils of *Sarbarai* in old days. But even at present here are 5,000 to 7,000 acres of land under garden crops watered by the well irrigation. The *Barees* and *Malees* are generally the people who cultivate garden crops Plantains, vegetables betel leaves, potatoes, onions, chillies and other crops are grown in these garden fields called *vadis*. These people are generally well off and not indebted But it must be noted that their women and children work in the fields. Women are generally hardworking—they themselves go to all weekly markets and personally sell the garden produce to people.

It generally happens in Berar that at first there is rainfall which is more than enough whereas in the latter part of the season the rainfall ceases and crops begin to wither This year was a peculiar year. We had late rains which commenced on 4th of July 1926. First the rainfall was excessive and then there was a long break which caused crops to be dried up. The season was bad. There were no crops or perhaps there might be 8 to 10 annas crop in some places in Berar In some fields there was *bandi*—there were no ears of *juari*. On the whole this is a bad year and the agriculturists are ruined in fact Had facilities of well irrigation been provided in Berar, the Berar cultivators would have got some relief.

I therefore suggest that the facilities of well irrigation should be provided in Berar. In the first place a survey of the tract of land near water may be made and Government should dig wells in the fields of cultivators at a certain proportion. They should be constructed and handed over to cultivators. Money may be advanced from *taccavi* funds and the wells should be constructed under Government supervision at a cheap cost in consultation with the *Panchas* of the village. No engineering estimate should be passed unless it is approved by the *Panchas*. In short the work should be done as economically as possible.

A perusal of the Indian Irrigation Commission Report published in 1901-1902 shows that there are hundreds of wells constructed in the United Provinces and the Punjab and other places so that the cultivators are profited thereby If wells are supplied to cultivators they may take to growing fruit trees such as plantains, grapes, oranges, lemons, mangoes, etc, for which there is a great demand. Vegetables may also be grown in plenty and an industry can be built up of the surplus vegetables that may be preserved by the dehydrogenation process In this way there will be a great stimulus to agriculturists to take to some by industry. Now as the cotton rate is going down, the cultivators will resort to gardening which may prove more profitable now than growing cotton Arrangements may be made to supply pumps and small oil engines on hire purchase system.

Some intelligent and interesting processes of utilising the surplus rainfall in a year were demonstrated in the great agricultural show held at Poona in October 1926 by one European expert. Some 5 or 6 processes were shown. I suggest that agricultural officers of Berar should study these processes and try them in Berar, when there are such opportunities to do so and they should be explained by the officers of the department to people interested in agriculture in a public meeting held in some village or town.

QUESTION 10.—FERTILISERS.—Lands under cultivation are generally now exhausted as they have been cultivated for years together, without giving them a proper supply of manure. I think the Indian peasantry, I am speaking especially from the Berar agriculturists' point of view, are in need of cheap manures, more than anything else. Cotton is sown everywhere for many years on account of its high prices—the sowing of *juar* is neglected and the old method of rotation of crops is also forgotten. The small landholders are not in a position to spend money for manure and even big landholders find it difficult to give a copious supply of manure to all of the lands.

Even if the supply of cowdung in the Province is all used, it is insufficient Hence the real necessity and the real duty of the Agricultural Department is to supply to all landholders, small and big, manure at a cheap rate. Cheap manure depôts should be opened in each village or group of villages so that manure will

be within easy reach of the poor cultivators. I know that this is a difficult task and will entail large expenditure for which no money will be available. Cowdung is used at present for fuel but if arrangements are made by the Forest Department to supply fuel to villages I am sure they will utilise the cowdung and urine for manurial purposes.

Plenty of dry leaves fall from a number of trees in the forests, which the Agricultural Department with the help of the Forest Department may turn into manure An experiment of preparing manure from dry leaves was made at Rothamsted in England. It proved successful. Similar attempts may be made in India for supplying manure to people of the country. There are phosphatic mines in the country which may be utilised for manurial purposes as stated in a resolution of the Board of Agriculture held at Poona There are also other artificial manures which may be prepared by Government and distributed at a cheap rate. People should be taught to utilise cowdung and urine of cattle and they may be induced to live in their own fields with cattle so that they will be able to use cattle manure and to supervise the agricultural operations as well. They will live in open and free air which will keep them strong and healthy.

The use of fertilisers is very important in the productive capacity of the lands. I have given above the view of the general cultivators of Berar Cheap manure supply in the village is the only remedy, if the productive power of land is to be increased. It is desirable that the Government should prepare artificial fertilisers and supply them to even a poor cultivator. It must be within his power to purchase it. The cultivators are not expected to answer questions which shall be answered by Government experts and the reports should be published in local papers. A resolution was passed in the Conference of the Board of Agriculture held at Poona but it is regrettable to note that no steps are taken by the Government of India to enforce, try or make an experiment. Foreign made manures are not popular but an attempt should be made to supply them at a cheap rate when they may be utilised by the people.

QUESTIONS 11 AND 13.—CROPS AND CROP PROTECTION.—Various crops are sown in the Province such as cotton, *juar*, wheat, *tur* and other pulses, linseed.

The rotation of crops is a good system and is followed in the Province. Crops are intermixed with *tur* and other crops.

Combination of crops in a place is resorted to in America. This system supplies various crops which are necessary for the maintenance of the family and bullocks, cows, etc.

Now as the cotton rate is going down, cultivators will stop sowing cotton and will now resort to a greater extent to *juar*, ground-nuts, castor seeds and other oil-seeds which command high value in the markets. The department should arrange to supply money necessary for the increased production of these crops.

The department should now pay more attention to the methods of increased production of cotton per acre. If America produces four *khandis* of cotton per acre it is not known why India should not produce the same quantity per acre. If the Agricultural Department makes vigorous attempts in this direction, I think, India must produce increased quantity.

Protection of crops.—Poor people try their best to protect the crops but are generally not very successful. Wild pigs which are generally strong and robust animals destroy the crops *juar*, sugarcane, potatoes, ground-nuts, vegetables, etc., to a great extent. It is said that pig proof fencings are available for sale in certain shops and one firm had exhibited such fencing in the Agricultural Show at Poona. But it is said that it proved a failure. One big strong pig jumped and broke the fencing and effected his entrance into the ground and destroyed the crops therein. This is an example which shows how even wild animals can demonstrate the failures of big things or contrivances invented by people in this world

Experience shows that if a pig is shot out of a batch of pigs that attack a field this incident creates terror and the pigs never come to that field again for several months I therefore propose that gun licenses should be issued to the good and trustworthy cultivators for the protection of crops. I think that this measure will protect many crops from the invasion of pigs which damage the crops to a terrible extent.

It is said that the pigs dig up an underground pit below the fencing. They go in this pit and then come up in fields and destroy the crops. So in any case fencing will be of not much use and it is therefore advisable to issue more gun licenses to cultivators for protection of crops.

R. S. G. N. SAHASRABUDHE.

QUESTION 14.—IMPLEMENTS.—New agricultural implements have come to be used. The iron plough, winnower and chaff cutter seem to have become popular with Indian farmers. Tractor or steam-plough requires a large area and seems a very costly and troublesome business. Rich zamindars might make use of it. At the Poona Agricultural Show some enterprising firms who have been manufacturing agricultural implements of various kinds exhibited them in the stall. Messrs. Kirloskar Brothers, the Satara Engineering Works and Mr. K. B. Joshi of Poona are some of the Indian manufacturers, a fact which does credit to Indians who need to be encouraged by the Government who should purchase the implements and thus increase the sales. I am glad to see that the Central Provinces and Berar Agricultural Department is patronising Messrs. Kirloskar Brothers. There are technical institutes in Berar and the Central Provinces of which the Victoria Technical Institute of Amraoti to which the Government contributes Rs. 7,500 per year has iron and carpentry classes in which the agricultural implements can be manufactured with the help of the Agricultural Department.

More labour saving machines and tools should be invented and brought into use. I experienced this year the difficulty of removing grass by inter-cultivation when there was a large break in the rain. Cotton and *juar* plants had grown high and it was difficult to remove grass within the two rows by *bakkhar* or *dawra* An instrument or machine to remove this may be invented by the Agricultural Engineer. Too much rain in the first part of the monsoon and an unpleasant break in the latter part have become the characteristic features of the rainfall in Berar and a machine or a tool to deal with the difficulties consequent will be welcomed by the rural people.

QUESTION 16.—ANIMAL HUSBANDRY.—*Cattle-breeding and dairy farming.*—There are nine cattle-breeding farms in the Central Provinces and Berar of which two are going all right and the others are not in a very good condition.

I am not of the opinion that bulls for breeding purposes should be purchased from foreign countries at a high cost of Rs. 2 000 to Rs. 3,000 per bull. The breed produced is strong but in course of time the studs become defective and do not serve the agricultural purposes. Strong bullocks are available in this country and can be purchased at Khamgaon, Gujarat and Kathiawar markets The breed produced by these bullocks is sufficiently strong to serve the agricultural purposes in the country Large number of cattle die for want of sufficient fodder and grazing during the famines and it is absolutely necessary to increase the number necessary for cultivation.

I think the system of money prizes to breeders of cattle with a view to encourage them is a good one and should be continued and developed as far as possible. The rich landlords will thus be encouraged and maintain cattle-breeding and dairy farms in their houses in villages.

I am glad to know that a cattle-breeding and dairy farm will be established at Ellichpur in the near future at Government cost.

QUESTIONS 17 AND 18.—AGRICULTURAL INDUSTRIES.—(1) Shortage of rainfall even in one year brings the agricultural population to a miserable condition and hence they are driven to relief works immediately. But the Indian peasantry is not accustomed to hard labour and they find it difficult to meet the famine conditions. At such times other means of getting money to supplement their agricultural income are absolutely necessary for their maintenance. Instructions for carrying on small industries are therefore quite necessary to help these people. The Indian Famine Commission of 1880 has laid stress on the necessity of teaching small industries and the Indian Education Commission of 1882 also recommended the introduction of small or village industries amongst the masses of the country. I therefore suggest that the Agricultural Department should encourage the introduction of small industries and try to teach them and finance them, if possible, by the formation of societies with the help of influential non-officials in the village.

(2) Below is a list of small agricultural industries which may be taken up by the agriculturists to supplement their earnings from fields.

(*a*) Paper pulp and paper making from cotton stalks.

Hundreds of thousands of tons of cotton stalks are burnt down and wasted every year in Berar and other cotton producing parts of India They can be used for making paper pulp for which there is a demand from the paper mills in the country. I tried my best to make an experiment of making paper from cotton stalks and in January of 1916 I despatched a bundle of cotton stalks from Ellichpur to the Director of Industries, Nagpur. He sent it on to the Agricultural Chemist, Mr. Plymen, who made

an experiment and found that good paper can be made from them. The report is published. Berar cotton stalks were also despatched to London by the Central Provinces Industrial Department at my instance when the Secretary of the Imperial Research Institute, London, made an experiment and reported that good paper can be made from cotton stalks. The Government of India took action upon this report and purchased a special paper machinery from Scotland and an experiment was also made by the aid of this machinery by Mr. Raitt, the Government Paper Expert, who also found that the brown or packing paper can be made from the cotton stalks. A copy of this report was sent to me by the Director of Industries. Now it is a commercial proposition and I am trying to start a company for the purpose if funds will be available. I am not sure of success. I am in need of a paper expert. The history of attempts to make paper from cotton stalks is embodied in the bulletin No. 1 of the Director of Industries, Central Provinces and Berar. We need not try to make paper but mere paper pulp may be manufactured in the village and tin boxes filled with pulp may be prepared and despatched to Bombay, Poona or Titagarh paper mills in Bengal. The process is simple Cotton stalks are to be cut into pieces of ½ inch length. They are all to be boiled when fibres are separated and turned into pulp which is then washed with caustic soda and tin boxes are to be filled up with pulp and despatched. A trial will have to be made This may give additional income to the agriculturists.

(*b*) Dehydrogenation Industry or the Industry of drying vegetables. All sellers of vegetables generally complain that they do not know what to do with surplus vegetables. It is a pity that they are ignorant in this respect. The people in Konkan on the west coast and especially women folk dry these surplus vegetables and preserve them and when required they again use them by putting them in water for a while when they are boiled. They have a good taste and are eaten up. When the cry for want of food came up from the front during the great War where American regiments and soldiers were located, the American experts and chemists made experiments and procured vegetables from newly prepared gardens for the purpose. These vegetables were dried by these machines and ships full of these vegetables were despatched to France for the needs of soldiers who were engaged in the War. A beautiful description of this dehydrogenation industry is published in the issue of the *Scientific American*.

This industry will be profitable to big owners of gardens and orchards if they are taught the process of industries mentioned above.

(*c*) *The Fruit Canning Industry*—India is well known for fruit trees especially mangoes which grow in abundance in Ratnagiri district on the Western coast They are all exported to Bombay when there is a large demand for them. The canning of fruits and despatching them to London where there is a great demand for them will be of greatest benefit to the people. I myself own a garden of 350 grafted mango trees about a mile off from the Ellichpur Cantonment I lease out the trees and get some income. But the contractors complain that immature fruits fall down owing to strong winds that prevail from the Northern Satpura Range in the months of May and June. Fruits fall down and the contractors are unable to make use of the unripe fruits which they sell at a cheaper rate in the local markets. Hence ripe fruits are not numerous and they complain of the loss sustained in this way It is said that a copious water-supply is necessary to prevent the falling of fruits in a raw condition. There are two wells with plenty of water but the lifting of water by means of the *mote* has become prohibitively costly and an adequate supply of water could not be given. I therefore requested the Agricultural Department to give me a loan of a plant of small oil-engine and pump on the hire purchase system But the reply was "Not in stock". I could have purchased one from Bombay firms but for want of sufficient funds I could not do so and I wished that the department might help me in this undertaking in which I have invested a large amount. People expect Government to help in carrying on a business. But the teaching and introduction from the Agricultural Department is necessary to make it successful and popularise it amongst big zamindars, landlords and vegetable growers on a large scale.

(3) The Bombay Government appointed a Committee to enquire into the conditions of the mango trade which made many recommendations for remedying defects. *

(4) In this way there are many other small industries which can be introduced and taught to people by the Department to gardeners and vegetable and fruit growers. The functions of the department should thus be extended. The work of planting fruit trees and marketing of fruits also be included in the programme of the work of the department.

I am glad to note that the special train that took away Berar farmers to see the great Poona Agricultural Show was utilised by me by the kind permission of the Deputy Director of Agriculture who arranged to distribute 700 copies of my pamphlet on industries to the Berar farmers getting to the train at Badnera.

---

*Not printed. Report of the Mango Marketing Committee—Bombay—Government Central Press—1925.

R. S. G. N. SAHASRABUDHE.

The real agriculturists are generally engaged till 31st March of each year and they have generally not any work to do from April to June both months inclusive. But their summer operation commences from the 1st day of the new Hindi year and some of them do not find much time after that. Also much other labour is available in these months hence they can find some time to do other subsidiary work.

Rope making from hemp is an ancient profession which is carried on by some old *Kunbis* to a small extent—for machine made ropes are now purchased in the market at a cheaper rate than hand-made rope. But female labourers, who are generally employed during rainy seasons for weeding grass (*nindhai*) and for picking cotton and cutting *juar* ears in the harvest, remain unemployed in these months; and some subsidiary work must be found to keep the women folk engaged in some small industries Female labourers are many in villages, however those who are in need of some business will earn some wages per day in small industries

There are also women who cannot work outside owing to the *purdah* system.

Amongst the women of middle class there is a need felt of adding some income to that of their husbands. These women are in need of indoor work. The helpless widows also are in need of such help.

When I had been to Poona I saw in the Girls' High School and Professor Karve's University hundreds of girls receiving education but generally of an academic character. There are also many girls receiving education in Amraoti, Akola, Nagpur and Bombay and other cities in the country. But the question of their means of livelihood comes only of course when they become widows There is a large number of women or girls of that nature and for whom some subsidiary industries shall have to be introduced for their maintenance.

I have got some experience of small industries and I was the President of the Board of Directors of the Berar Match Manufacturing Co., Ltd., Ellichpur, started in 1908. The concern was closed for certain reasons which I explained to the Indian Industrial Commission. I had also started a *biri* factory but I could not carry it on as it proved to be a losing concern I was interested in these small industries for many years and I read a paper on "small industries and scope for their development in the country" before the Indian Industrial Conference held at Bankipore in December 1912. I am also a member of the Industrial Board, Central Provinces, since 1922.

Small industries subsidiary to agriculture can be and should be started. An Industrial Survey Committee was appointed by the Central Provinces Government in 1908 I had the honour to be a member of that committee and Sir C. E. Low, K C.S.I., sometime member of the Commerce and Industries Department of the Government of India, was the President An enquiry was made and a report was published in 1911.

Similarly a report was published before 1908 dealing with small industries in the United Provinces where there are a good many carried on even at present. The population there is much more industrious than in Berar.

The following small industries are dealt with in these reports:—(1) Cotton weaving, (2) silk weaving, (3) blanket weaving, (4) gold and silver thread making, (5) oil pressing, (6) leather and hides, (7) alloys, (8) brick and tile making, (9) pottery, (10) dyeing and painting, (11) smithy, (12) carpentry, (13) iron crackers, etc

From experience I think that the following are the difficulties that stand in the way of opening small industries:—

(i) Want of expert knowledge and the help of experts.
(ii) Finances.
(iii) Demand for the articles.
(iv) Marketing and sale agencies.
(v) Want of enterprising spirit.

The Government is concerned with the first two and the people with the remaining causes. Sir C. E. Low has recommended that Government should provide experts and small machinery such as in the case of brick and tile making, pugging machines and a kiln which requires less fuel.

The public should open co-operative industrial societies, form themselves into sale agencies, and create an enterprising commercial spirit in rural areas. But the Government must take the initiative and start such industries.

R. S. G. N. SAHASRABUDHE.

My paper-making from cotton-stalks is now a commercial proposition. I must have money and a paper expert. If only pulp is produced by the villagers it will meet the demand of the paper mills in India There are many other industries such as oil-pressing, paper-making from rags which may be mixed with cotton-stalks, bee-keeping, mc culture, pisciculture, etc. which can be carried on but it is not possible to do anything in the absence of the Government initiative and money which is absolutely necessary.

Carpentry and Smithy.—The village carpenters and smiths are in need of help. They simply repair wheels and agricultural implements and put up tyres on wheels. But if they are taught more they will be better than the old ones. The Victoria Technical Institute at Amraoti gives higher training. The course is of two years If those who are trained there go back and settle in villages they will have better prospects of maintaining their livelihood. Many small machines will have to be made and repaired and the carpenters and blacksmiths of a better type will be needed. The development of small industries is sure to afford useful employment. People who know how to manage small oil-engines will be greatly needed. If facilities of well-irrigation are provided in the villages, it will employ a great deal more of ordinary and skilled labour.

The spinning wheel (*charka*) will prove a good cottage industry and it will be a source of income to workers who wish to work in their own houses. A good organisation is needed.

The weaving industry is also a cottage industry but for the last century it has had to face the competition of the manufactured goods of the mills of India and foreign countries. It prepares goods from coarse yarn which are mostly needed by the masses.

In Berar there are many weavers at Ellichpur, Ellichpur Cantonment, Anjangaon, Kolapur, Balapur and other places, and there is a large population of weavers in Nagpur, Kamptee and other places in the Central Provinces The Industrial Department is active in this respect and a cotton expert has been employed to do the needful. The Vaidarbha Mills, Berar, is opened at Ellichpur and it is possible that many weavers may be attracted to serve in this mill at the sacrifice of their own old art of hand-weaving I think that the art should not be allowed to disappear. The weavers can prepare good clothes such as *khadi rumals, atkas, lugdas* or *saris, cholikhans,* embroidery work, etc.

I therefore suggest to the Industrial Department of the Central Provinces to open a weaving school somewhere near Ellichpur where some rural farmers might learn the art of weaving which will afford supplementary labour and wages to them. The information given in the *Times of India* of Bombay, November 1926, is interesting and worthy of study.

QUESTION 19.—FORESTS.—Forests in the country are a valuable asset given by Providence well supplied with various kinds of raw materials useful to mankind; production does not cost even a pie to Government except when there is artificial production. The only expenditure incurred by Government is as regards the staff necessary for the maintenance and protection of forests. The administrators generally look at matters from the natural and broad point of view. But the village point of view is quite different. The people wish that provision should be made for grazing of cattle and pasture lands should be set free for grazing. I appreciate the advantage of the Government policy but the administration of any branch of the department must be as far as possible sympathetic and meet the wishes of the people.

Grass is required for feeding cattle. Bullocks are needed for agricultural purposes. Buffaloes and cows are needed for the supply of milk which is required for infants and children. Butter and *ghi* are also needed as tonic in food for people in general. So that cattle are an important asset for both the people and the agricultural purposes.

Sufficient quantity of forest area should be kept reserved for grazing of cattle and free grazing should be allowed to the greatest extent possible. Comparisons are odious. But in administrative matters they are needed to demonstrate the utility of the Government administration carried on in the civilised countries of Europe and America.

R. S. G. N. SAHASRABUDHE.

I give below a statement prepared in America which will at once show how much less land is devoted to cattle-grazing in India.

Name of country.	Total acres of land (in lakhs)	Acres of land left for grazing and pasture.
Great Britain and Ireland	775	230
Germany	1,332	214
New Zealand .. .	67	27
America	19,033	1,170
Japan	1,056	175
India	9,600	352
Bengal	505	30

The above figures clearly show that very much less land is reserved for grazing in India than in other countries.

In the Central Provinces and Berar during the year 1922-23, 3,151,919 cattle grazed in the forest, and the grazing fees amounted to Rs. 11,91,851; whereas in the Bombay forests 2,466,511 cattle grazed, and the grazing fess amounted to Rs. 4,85,804. This shows that the grazing fees in the Province are higher than those prevailing in the Bombay Presidency (*vide* Bombay Forest Administration Report for 1922-23 and also Agricultural Report of the Central Provinces and Berar for 1922-23).

In the Central Provinces and Berar in 1922-23 the forest revenue was Rs. 47,06,083 and the expenditure was Rs. 30,32,748, and the balance was Rs 16,73,406 for the same year In the Bombay Presidency the income was Rs 70,75,000 and the expenditure amounted to Rs. 38,67,000 and the balance was Rs. 31,68,000.

The percentage of acres of grazing per cattle is as follows. The grazing incidence varied from 2 to 4 in Akola, 14·1 in Melghat of the Berar Circle and 2·1 in Damoh to 6·9 in Hoshangabad of the Northern Circle, and 3·5 in North Chanda to 10·7 in Bilaspur of the Southern Circle of the Central Provinces.

The Forest Department should allow facilities to villagers to make use of forest produce. It should supply sufficient fuel to villagers at a cheap rate and store it in villages within the easy reach of the people. Sufficient grazing lands should be set apart, say, hundred yards of the forest area from the village, for the use of cattle grazing. Some portion of the forest area should be handed over to the panchayats of the village for management. The Panchayat Act has come into force in Berar and the Central Provinces and the Government has appointed a special officer to form these Panchayat Courts and thus develop the old panchayat system in the Province.

There are no apprehensions therefore regarding the development of the panchayat system and the efficient management of the forest area entrusted to them.

QUESTION 20—MARKETING.—Marketing is a comprehensive subject and it is not possible for me to deal with the question from the point of view of the whole of India. I will therefore limit my criticism to the Province of Berar.

Generally there are Municipal Committees established in Berar, and wherever there is a Municipal Committee cotton markets and grain markets are also established. Within the limits of the Ellichpur Civil Station Municipal Committee, there is a cotton market as well as a grain market and there are sets of rules sanctioned by Government

R. S. G. N. SAHASRABUDHE.

for their management. I was in charge of this Municipal Committee for 26 years—8 years as Honorary Secretary and 18 years as its Vice-Chairman. I was a Chairman of these markets for some years and I have got some experience of their working.

There are *adtyas* and *dalals* licensed by the Committee on payment of certain fees. They transact business on behalf of the agriculturists. The *adtya* generally supplies money to the agriculturists whose cotton is sold after taking some percentage commission and he gets this money back from the owner of the ginning and pressing factories to whom the cotton is generally sold. The *dalal* settles the bargain and cotton is weighed by weighmen who are also licensed by the Committee on payment of certain fees. In this way there are three middlemen in the business before the money goes to the hands of the cultivator; and he being ignorant may be deceived by these middlemen. It may be noted all the cultivators that come to markets are under the thumb of the *Mahajan* or *sowcar* whose man is always present to get hold of the sale proceeds in repayment of any loan The cultivators get only what remains after the accounts are cleared

The middlemen do some work and get their commission for doing the work because the cultivator is unable to transact the business himself so that the agency of these middlemen is absolutely necessary as long as the cultivators remain uneducated. The only thing possible is that the Chairman of the Committee should himself personally supervise all transactions and see that the cultivators are not deceived or molested

There is a grain market estblished by the Municipal Committee quite near the town A committee is also appointed to supervise the operations. The whole of the crop from Melghat and Betul in the Central Provinces comes into the market. There are here also middlemen and measurers who are licensed by the Commitee on payment of certain fees but the system of selling of grain is peculiar. No rates are settled but the cart loaded with grain is put up to auction per *khandi*, say Rs. 30 for *juar*, *tur* etc. If there be potatoes *lac* or other produce then at a certain rate per maund. The highest bidding is accepted and the highest bidder pays cash to the owner of the stuff. The treasurer gets some fees for measuring the grain at a certain rate per *khandi* or maund. The man who sells by auction gets some commission and sometimes he advances cash to the purchaser if he has not got money on the security of the grain purchased and on payment of some interest.

But the standards of weights and measures are not uniform in India and even in the Province, *e.g.* the *paili* is of two seers here at Ellichpur whereas the *paili* at Akola is larger than this. It is absolutely necessary that weights and measures should be standardised. Though it is some years since the Weights and Measures Committee reported, nothing seems to have been done in the matter.

In America cotton is graded and sold. The ignorance of Indian cultivators will not permit the introduction of this system but it is time to consider whether the weights and measures should not be standardised and whether the auction system is good or bad. The sub-committee of the Indian Central Cotton Committee has approved the Berar Cotton and Grain Markets Rules in force in Berar and recommended that they may be made applicable to all cotton markets in India.

The following are the main crops that come into the grain markets on Thursday which is a weekly market day :—

(1) *juar*, (2) *tur*, (3) wheat, (4) seeds, such as *erandi* seeds, (5) potatoes

About 7,000 cart-loads come into the market but it may be noted most of the carts come from Betul in the Central Provinces There is a great demand on this side and the sellers obtain good price. There is a good motor road from Betul to Ellichpur.

QUESTION 22.—CO-OPERATION.—Co-operative Central Banks advance money to an agriculturist but the Agricultural Department does not care to see whether the money advanced by the banks is really utilised by them for agricultural purposes.

Dr. Mann referred to this in the Conference of the Board of Agriculture held at Bangalore.

As a Director of the Central Bank, Ellichpur, I know that the Agricultural Department was never in correspondence with the Bank or village societies and does not enquire how much money is advanced, to whom advanced and what has become of that money.

QUESTION 23—GENERAL EDUCATION.—I am still of opinion that no attempt is made in the direction of compulsory education and the creation of agricultural bias in the minds of students.

R. S. G. N. SAHASRABUDHE.

The syllabus that existed till the year 1924 seems to have been amended now and no attention is paid to gardening both by the teachers and the Deputy Inspectors. I think gardening and nature study should be taught which will give young boys of the farmers some liking for agriculture and industries. The Education Department in Berar should pay attention to this and the syllabus if necessary may be amended.

The same is the case with Anglo-vernacular schools and high schools in the Province. Sir Charles Wood's despatch of 1854 by which the present educational system was introduced in India is very important and deals with the question of education from all points of view and has emphasised that the instruction should be given in all arts and sciences so as to be suitable to the country in future years. The despatch is statesmanlike and is clothed in words which shows magnanimous and generous mind which was full of liberal and democratic principles which are absolutely necessary to produce right type of citizens, artists and scientific people. Clerks were needed at the time to carry on various departments of administration which had to be established in the country at the time. Hence education of a general and academic character was imparted in the school and Matriculates, B.A's and M.A's. that were produced in the schools of that time were given high lucrative appointments. in the departments that were newly established or were being established at that time.

This created a strong impression on the minds of youths of the country that by becoming B. A's. and M. A's. they get highly paid appointments in the Government service. This impression still holds on their minds and hundreds of thousands of young boys throng the high schools and try to receive instruction of a purely academic character which is of no use at the present time. When a notice appears in a newspaper that a place of Rs 60 per month of a school teacher or a clerk is vacant, hundreds of applications flow in from B.A.'s and even M. A.'s. seeking the above appointment. Out of these one graduate man gets the job and the others are disappointed and go away

In this way the present system of education is defective and it requires to be improved. The syllabus must be amended and industrial bias in the minds of boys must be provided for in the schools in this Province from primary education to Anglo-vernacular and high school education

A son of a rich landlord wishing to learn agriculture must pass through primary and secondary grade schools then after passing Matriculation examination he is to join the Agricultural College at Nagpur when he is to learn for the first time the principles of agriculture during the first year. After spending 2 years more in the college he passes the B. Ag. and even after passing the examination he is not found capable and competent to teach efficiently the methods of agriculture to the rural people.

One year's practical instruction is absolutely necessary before he is employed in the department. This system of general education does not produce salutary effect on the minds of young boys. They live in well-built buildings, and they receive education in well-built, costly schools. Boys being accustomed to such a way of living on return home find themselves inconvenienced and are ashamed to live in their houses and thus put their parents to an unnecessary expenditure. They are ashamed of holding the plough or other agricultural implements in their hands and refuse to help his father in the agricultural operations.

On arriving at Amraoti if the members of the Commission will pay a flying visit to the King Edward College they will see a very costly college building equipped with a very large beautiful boarding house or hostel with large and spacious rooms with terrace and gallery supplied with electric lights everywhere, on all of which 16 lakhs of rupees have been spent. Naturally a student accustomed to live in this costly building will feel ashamed to live in the house in which he was born. The country is poor and does not require such costly buildings.

Boys in the village generally do not like to attend the schools, and their parents think that they will lose the wages they can earn every day. The sons of rich landlords think that they require no education because they have got ancestral lands to support them and their families. India is a poor country and education is received by the people not for education's sake but as a means of livelihood. Compulsory education is therefore needed.

But the fact of the matter is that good teachers are needed to teach the boys. In India the ideal of a teacher is quite different from that of a teacher in England. In this country, the teacher only looks to the results of the annual examination and tries to get as many boys passed in the examination as possible, and when he sees

that more than 1/3rd of the boys have passed he feels himself satisfied and thinks that he has done his duty. He does not care for the future well-being of the boys nor does he care to see or think how the boy will be able to maintain himself.

But the ideal of a teacher in England is different. He teaches the boys as in duty bound and feels that he is paid he must be true to the salt and he not only teaches the boys in the subjects given in the curriculum but he always cares for his future welfare and the formation of his character to be a right citizen In short he takes care of the boys from all points of view just as a father takes care of his own son.

When a student passes his Vernacular 4th standard or English 4th standard the teacher should ask him what specialised education whether industrial or agricultural, he wishes to have. The teacher should impress upon the minds of the students the benefits of this sort of education. The student then should enter those schools and carry on their further studies. By this system the attention of the student will be diverted from the academic course to industrial and agricultural courses.

QUESTION 25 — WELFARE OF RURAL POPULATION.— (1) Improvement of agriculture and (2) agricultural education and agricultural industries really form main factors of the welfare of rural population. Besides this, there are also other matters which require Government's help They are—

(1) Civil dispensary,
(2) Veterinary dispensary,
(3) Panchayat court,
(4) Sanitation office with a good sanitary committee,
(5) Police station,
(6) Good roads in the village itself,
(7) Vaccination office,
(8) Wells of good and drinkable water ample for all castes and creeds,
(9) *Hakim* or *vaidya dawakhana*,
(10) *Chawadi*,
(11) Dâk bungalow,
(12) Sufficient grazing ground,
(13) A cattle stand,
(14) Good clean and airy houses,
(15) Vegetable market, and
(16) Weekly market. etc., etc.

The District Councils and Taluk Boards should be encouraged to look to these matters. The Tahsildars and Deputy Educational Inspectors should be told to look to these matters.

Provided with these facilities the village will present a beautiful appearance of a prosperous rural population.

As for an economic enquiry of typical villages, I beg to submit that I will not bother myself with such an enquiry nor will I advise Government to undertake this intricate and difficult business The people will look upon this as a suspicious business They will not trust officers, they will not disclose their secrets, wealth or profits in the business Naturally nobody likes to disclose what wealth he has got in his possession. The whole business will be very costly and is impracticable. The country is so much involved in ignorance. Foreign methods will not do here.

QUESTION 26.—STATISTICS —Maintenance of proper and timely statistics of any subject is of primary importance in the administration of a country.

But the business is very difficult and requires a very careful and earnest officer and many clerks to do it.

Being a pleader I have got some experience of testing some of these statistics. The statistics referred to in the question are generally maintained by the Tahsildar of a taluk, with the help of his *patel* and *patwaris*. The Revenue Inspectors also collect information regarding the yield of crops, land under cultivation, census of cattle, etc.

"*Pere Patrak*" is a statement annually prepared in the months of September and October and the estimate of the yield of the crop is also made by village officers.

A *Mahar* of village or a *patwari* or *patel* goes to some fields and asks the man who is present there "who had sown the fields." The man gives the name of a certain man and he is recorded in the statement as the man who sowed the field. These statement

are given in evidence in the civil courts in civil cases to prove possession of the land. On cross-examination of the village officer I have found that no enquiry is made by him as to who has really sown the land, he fails and generally these statements are not believed by courts without the support of good additional evidence.

Similar is the case with statements of the yield of crops. The village officer goes to field and sees the cotton plants or *jwari* ears and forms an estimate of the crops of hundred of acres of lands. It is not known how they arrive at the conclusions But those statments are believed by Government and returns of yields are based on them. There is no strict supervision over the village officers who are some times corrupt The methods are loose and clumsy and in my opinion they do not disclose the real condition of crops. The methods and system must be improved.

There is no doubt that agricultural statistics maintained at present are not a correct index of the condition of the lands and their owners. Such statistics when published give an unreal idea to the officers and people and even to foreign people who read them. This is not good. Therefore improvements must be made. But the enquiry will be a matter which will require a lot of time and labour and will at the same time be very costly The only good and practical method is that the information should be collected with the consent and knowledge of the *Panchas* of the village.

To sum up what is now required we need: —

1. Extension of primary and agricultural education
2. Teaching of scientific methods and profitable methods of production.
3. Increase of production.
4. Teaching of planting fruit trees
5. Irrigation of gardens and orchards, etc.

The present agricultural policy should be extended and must be shaped in such a way that the farmers will obtain knowledge as indicated above

Important points to be attended to are :—

1. Good seed. 2. Tillage. 3. Manuring. 4. Inter-cultivation. 5. Dry farming. 6. Draining the fields. 7. Intensive and extensive cultivation. 8. Methods of profitable production. 9 Fruit and trees planting. 10. Fruit canning. 11. Flower and vegetable gardening. 12. Organisation of orchards. 13 Vegetable growing. 14. Sowing of varieties of cotton 15 Teaching of small industries. 16. Marketing of cotton and other articles. 17. Well irrigation in Berar, etc.

How many of these are attended to at present may be kindly considered by the Royal Commission. A bureau of plant industry and extension service department should be opened.

Policy of the United States of America Department of Agriculture.

America is well known to be one of the most developed countries of the world and the United States of America Department of Agriculture is also equally developed to a great extent. The departments are well organised and the departmental officers seem to be more in touch with the farmers and they have got business like methods for doing their work. They have got an extension service department in which extension work is done in each branch of the department.

The features of the above extension service are as follows.—

(1) Extension work in Agricultural Engineering "Agricultural Engineers' duties include the teaching of farmers how to drain their land and to show that the increased production from drained land will pay amply for the improvement". "Under this head are included such subjects as plans for the construction of dwellings, barns, poultry and other farm buildings, farmstead planning, ventilation of buildings and painting and other preservative treatment."

Such extension service branch is not yet opened in India. Here the work is limited to a certain stage The sphere of the present work can be widened and it is possible to have an extension service branch even in India. This service may include the teaching of planting and growing fruit trees, preservation of fruits, export trade of fruit, marketing of agricultural products, visiting the houses of farmers and making enquiries, teaching of small cottage industries, etc. The Agricultural Department is a teaching department in America. The illustrations given above will show that earnest

R. S. G. N. SAHASRABUDHE.

and strenuous attempts are made in America to teach the villagers and convince them of the utility of the department. It cannot, therefore, be said that the Agricultural Department in India is working so successfully as it is sometimes said in the country. The rural people are still ignorant and uneducated and there are no statistics showing the effectiveness of extension in teaching rural people. Demonstrations of scientific methods of profitable production are made but there are no statistics to show what effect these demonstrations have proved in the minds of the people and how many of them have actually followed the methods and profited themselves; so that nothing positive can be said without the publication of these statistics

A passing reference may be made to the recent Report of the Currency Commission which has recommended the raising of the exchange rate of the rupee from 16 d. to 18 d. This recommendation of the Commission is most prejudicial to the interests of the poor agriculturist in India. It is, however, pleasing to note that the Bill brought forward regarding the subject was withdrawn by the Government of India in the Legislative Assembly. I request the Members may kindly recommend the retention of the present rate of exchange and cancellation of the Commission's recommendations and thus strengthen the hands of the Government of India The poor agriculturists will be really much indebted to this Commission for this act of kindness.

Oral Evidence.

32425. *The Chairman*: Rao Sahib Sahasrabudhe, you are a pleader at Ellichpur in the Amraoti district? Yes

32426. You have given us a note (including some very interesting illustrations) and we are obliged to you for that. Have you any general statement to make at this stage or may I ask you a few questions on your note?—Regarding demonstration, on which I have already made some remarks, I wish to make a statement. An attempt should be made to run the demonstrations on a commercial basis, the financial aspect of the question must not be regarded as secondary; otherwise, of what use will they be to the villagers? I have met many villagers and talked to them. What they say is this: "If it is proved to us that these demonstrations and other experiments are successful we will adopt them, but not otherwise".

32427 So that you think that demonstrations should be carried out in such a fashion as to give the cultivators a clear indication of the profit-making value of the suggestions?—Yes, that is my opinion.

32428. Your note is very full and I think you have made your points perfectly clear; but there are one or two questions I should like to ask you With regard to your answer to our Question 8, on page 460 of your note, have you experience of well irrigation?—I have got my own field in the village of Khandi and for two years I conducted experiments on well irrigation, directly supervising the work. I have two wells. I have here a statement which was given to me by the Commissioner of Berar in which it is stated that there are about 20,000 acres of land under garden crops in Berar and these 20,000 acres are cultivated by castes known as *Baris* and *Malis*; these are different from the *Kunbis*. As regards agricultural indebtedness, the former two castes are in a better condition than the *Kunbis*; it is the *Kunbis* that are involved in indebtedness I think that, especially this year when there is no rainfall, had there been wells in many of the villages at least at the rate of one well for every 6 acres, the cultivators of Berar would have been in a better condition; they would have had more crops this year. This is my object in proposing well irrigation in Berar, where there is no irrigation at all, whereas the Central Provinces are fortunate enough to have a good deal.

32429 Do you use mechanical lift for the water from these wells?—No, we use the bullock *mote* and even that has become costly now. I am searching for mechanical lifts. I have asked the department to supply me with one pump and engine on the hire-purchase system because I am not a very rich man and cannot purchase the whole plant at once. I want to make an experiment on the hire-purchase system first and then next year it is my intention to purchase the whole thing.

32430 You are willing to undertake the purchase of the plant on the hire-purchase system—Yes.

32431. You are interested, I see from page 463, in the making of paper?—Yes.

32432. I think you have done certain experimental work in that direction?—I myself have not done anything, I am not an expert on the point. But I requested the Director of Industries to make an experiment and I sent one bundle of cotton stalks from Ellichpur to the laboratory here. Mr. Plymen, who is Director of Agriculture now, was the Agricultural Chemist at that time and he made an experiment and reported that good paper could be made from it. I then asked the Central Provinces Government to start a pioneer undertaking so that the people might know that it was a profitable concern, but they refused. A suggestion was made by Mr. Crosthwaite that the cotton stalks should be sent to a laboratory in London and to that I had no objection The department accordingly sent the stalks and a very satisfactory report has been made by the Research Institute in London. Then, of course, Government was convinced that as such a satisfactory report had been received from London, this was going to be a satisfactory business and they decided to conduct further research into the matter With this end in view the Government of India asked the Paper Expert at Dehra Dun, Mr. Raitt, to undertake the business. A special kind of machinery was required for paper-making and during the War one of the ships which was bringing out this machinery was sunk and for a time there was nothing done. Then some time later another machine was obtained and an experiment was made at Dehra Dun in August 1924, a copy of the report which dealt with the experiment was sent on to me.

32433. Have you any indications as to whether the cultivating class would take up an industry of this sort?—I am not sure about that. I tried to persuade the villagers, but they were averse from taking to it It is a very laborious business, in fact, the whole process is very laborious. Some body would certainly have to make an experiment and prepare a good pulp which could then be sent either to the paper mills at Bombay or the Tittagarh Mills in Calcutta Attempts must be made in that direction to start with

32434. I see that you have also interested yourself in fruit and vegetable preservation by the method known as dehydrogenation?—Yes, it is a very splendid method followed in America. They supplied vegetables to the Army in France. The description of this method is given in the "*Scientific American*" and I have copied it from that.

32435. This method of dehydrogenation produces a dry vegetable which has got to be soaked in water?—Yes. This practice is at present being adopted in Konkan. Our women there do it, when there is a surplus of vegetables they resort to this process and utilise it when necessary.

32436. So far no one has tried it in your village as yet?—No, it is only a suggestion.

32437. The Commission is interested in this problem of the standardisation of weights and measures Do you think the public would be prepared to take that step?—The Marwaris would not care about it, they would say that it was very difficult The practice in Berar at the present moment is for the Currency Officer to come and inspect the weights and measures every year. Personally I think there ought to be a standardisation of weights and measures throughout the whole of India. Nowadays there is much confusion: for instance, our Ellichpur weights and measures do not tally with those at Akola or those at Amraoti and this causes a good deal of confusion. We must try to adopt one common standard; this would be to the advantage of the public.

32438. To change the subject, I want you to develop this idea of yours which you have set down on page 469 of your note according to which you think a year's practical instruction is necessary before an agricultural officer is employed in the department. Would you include instruction on the commercial side of farming?—Yes, that is my idea, and that is the reason why I wish to follow the American method I have had a good many pamphlets from America.

32439. On what do you found yourself on page 470 when you criticise the field statistics? Is it your own experience?—Yes, on my own experience in the court. When this question comes up in the court, the *patwari* has got to make a report. He comes with a record which shows that a certain man has sown the field and the amount of the crop is so much. In cross-examination I have found that no enquiry is made by the village officer as to who has really sown the seed and generally these

statements are not believed by the courts without the support of good additional evidence. The enquiry is not conducted at all and the people do not have a real idea of their actual position. I must say that the Board of Agriculture is a very good institution. I have read all the reports of the Board which are published every year and a good many resolutions are passed but I fail to see what further steps can be taken in the matter of bringing these resolutions and these various kinds of literature to the notice of the village people At the top everything is all right. All the English knowing people are conversant with it, all the officers of the department know it, but whether this knowledge goes to the villagers is a most important question. I really think that these things should be especially explained to the villagers either by the Tahsildar or by some special officer who should be sent to the villages. That would be a very good kind of propaganda work to let the people know what is going on from day to day. The people of Berar particularly have the power of discerning what is good and what is bad for their own interests They read the resolutions which are passed and if they see these things they will interest themselves in these experiments and gradually they will readily accept the new and improved methods That is my suggestion. I am for developing the propagarda work of the Agricultural Department as I am quite certain that many things can be done in that direction. I have already expressed myself with regard to agricultural education As you know, an agricultural exhibition was recently held at Poona Now this exhibition was of very great educative value to the people, but I doubt very much if the agriculturists knew anything about it. I suggest that regular officers of the department should be deputed to go into the villages and to lecture to the villagers on these matters.

32440. *Sir Henry Lawrence* Are you from Poona yourself?—No I am resident of Berar My birth place is in the Satara district.

32441. You mentioned Lord Willingdon amongst the people who have done good for agriculture in India What particular branch of Lord Willingdon's work were you thinking of?—Lord Willingdon, as President of the Board of Agriculture, held at Poona in 1917 gave an address and that address is very interesting. It interested me very much as it deals with the whole policy of the Agricultural Department as to what should be done by the department, what should be taught by the agricultural officers to the students and the people of India, and how much more they ought to know, and things like that

32442. I thought perhaps you had in mind the example Lord Willingdon had set in the dairy that he started in Poona and his encouragement of cattle-breeding? You were not thinking of the cattle question in particular?—No, I did not have that in mind. His speech impressed me very much as an agriculturist.

You were impressed more with his speech than with his practice?

32443 You said a little while ago that there is a regular inspection of weights and measures every year Where is this done?—There is an officer called the Currency Inspector at Akola.

32444. Is it done by the Municipality?—No, he is a Government officer and he goes to the Municipal office He makes a round of inspection in the town shops and examines the weights and measures. At any rate, that is my idea of the work which he is doing. If he sees any faulty measures or weights in the possession of any shopkeeper, he prosecutes him.

32445. Have you ever known of any such prosecutions?— Not within the last two years.

32446 Within the last fifty years?—When I was a pleader I came across one or two cases.

32447. *Sir Thomas Middleton*: You mention in your evidence that you have been reading American publications and you are the second witness to-day who has told us that he has been getting information from America. How did you get these publications?—I asked the United States Department of Agriculture to give me their methods of working the department. They did not describe the method of working their department but sent me these pamphlets and asked me to read them, when I would find out their methods.

32448. How many have they sent you?—About 50 in all.

32449. Have you ever made an application to the Ministry of Agriculture and Fisheries for information?—No.

R. S. G. N. SAHASRABUDHE.

32450. You wrote to America, but you never wrote to Britain for any information, did you?—No.

32451. *Dr Hyder*: Your note is very comprehensive. You say that the productive power of the land is not increased along with the increased expenditure? Have you any evidence of that?—Even at the present time the productive power of the land is not more than one *khandi* per acre.

32452 How old are you?—I am sixty-eight years of age.

32453. Do you not think that Berar produces more cotton per acre now than it used to when you were quite a young man?—I quite agree with you. The amount of cotton has increased, but along with that the land under cotton cultivation has also increased; that should be taken into consideration. I have got a report of the Deputy Director of Agriculture in which he shows how the cultivation of cotton has increased.

32454. You make a very interesting suggestion about compulsory primary education. You say that the age should be raised from 6—11 to 10—13, both inclusive. If you had that, as the boys of that age are more valuable to their parents, do you not think that you might find all the schools empty?—In order to meet that, I have made another suggestion At present the schools are held from 11 in the morning to 5 in the evening, I say that these hours are not wanted for village schools.

32455. Let us keep to the age of admission?—That is the answer to your question. The parents will not suffer, because I have suggested that the school hours should be from 7 to 10 in the morning.

32456. What should they do from 7 to 10? They should do nothing?—The boys will remain in school, I am against the present school hours. I say that the age should be raised and the school should be held only in the morning, the rest of the day should be left to them to earn their wages. The parents will be satisfied with that.

32457. You have rendered some public service by distributing 700 copies of your industrial pamphlet to the agriculturists Was an industrial pamphlet suitable for placing in the hands of the agriculturists?—Yes, at the end of the pamphlet I have given particulars about small industries.

32458 You know the people here very intimately. Are there any items on account of which the people will not undertake certain industries, for instance, fish culture or poultry keeping? Have they got any custom of not ploughing after midday, or not taking meals on any particular days?—I do not think the *Kunbis* will take to fish culture and poultry keeping.

32459. What about silk worm rearing?—Speaking for Berar, there are no mulberry trees there, and silk-worm rearing is not possible

32460. Have you got any *Satnamis* in your part of the country?—No. They are only to be found in Chhattisgarh

32461. The people of Berar are all modern people?—Yes.

32462. With regard to rainfall, you suggest some instrument by which the rainfall could be made more certain and more regular What is this instrument that you have in mind?—The difficulty is that in certain seasons the rainfall is unequally distributed, and some contrivance should be invented, by which the rainfall could be regulated. Or else, surplus rainfall may be utilised. In the exhibition at Poona, Mr. Lowsley exhibited five methods by which surplus water could be utilised during dry weather. I admit that I am not an expert, but I think the Agricultural Department should take that question up, and explain the methods to the cultivators, or discuss the methods among themselves in order to find out whether they are really useful or not.

32463. What is the rate at which the Central Bank, of which you are a Director, lends to the small primary societies?—It is 1 per cent per month, or 12 per cent per annum.

32464. How are you going to entrust the distribution of *taccavi* loans to University graduates? Do you think they are quite competent to undertake work of that kind?—At present there is great dissatisfaction regarding the distribution of *taccavi*

loans. If an application for a loan is made to-day, the man gets it after 4 months. It might be due to the fact that the Tahsildar has too much work. Therefore, I have proposed a special officer, he need not necessarily be a B. A., who should be entrusted with this work. He should take the money into the villages and distribute it among the applicants immediately.

32465. Are any factors known to you why India does not produce 4 *khandies* of cotton per acre?—There are some factors. An adequate supply of manure is necessary, and there should be sufficient water made available by well irrigation. If they put in sufficient manure and, in case of less rainfall, make available well water, I think they will be able to get 2 to 3 *khandies* of cotton per acre.

32466. On page 467, you give an interesting table, in which you show these two items, namely total acres of land (in lakhs), and acres of land left for grazing and pasture. Do you not think that your table would have been better if you had added also the number of cattle supported and the crops raised, because there are differences as regards the kind of farming which different countries carry on? I admit it.

32467. You cannot draw any conclusion from that?—No.

32468. I find your mind is made up on this question of the ratio between the £ sterling and the rupee? You are for 16 pence to the rupee?—Yes.

32469. Could you amplify that? It is a complicated matter?—As I understand the question, I am not in a position to say that the agriculturists are benefited by increasing the rate to 18 pence especially in the case of export of cotton from India to Manchester.

32470. *The Raja of Parlakimedi*: I see that you take a lot of interest in agriculture. Do you possess any land yourself?—I have 30 to 40 acres of land, and about 350 grafted mango trees.

32471. What cultivation are you carrying on in that area?—Cotton and *juar*.

32472. Are you following any improved methods of cultivation?—I lease out the land. I am a pleader, and I lease out the land on the *ardha batai* system.

32473. You possess a good knowledge of improved methods of cultivation?—Now that I have retired, I intend to do something.

32474. May I know how long it is since you have retired?—One or two years but my son has passed his LL. B. just now, and I have handed over my practice to him. Now I have got time to look after my fields, and I will do my best as far as possible.

32475. Have you undertaken to translate any of these pamphlets on agriculture into the vernacular?—No. I have not yet done anything, but I mean to do something.

32476. Are you interested in cattle?—I am of course interested in cattle, it is for the good of the people, but I have not got any cattle.

32477. In your retired life, are you going to devote any of your time to uplift the present deplorable condition of the cattle in your part of the country?—I intend to do something, but I am growing older now, and I do not think I can be very active.

32478. I see that in the list of gentlemen that you mention you include the name of one of our colleagues, namely, Sir James MacKenna, as deserving of compliment. May I know what part of his work you appreciate?—He has published a report on the Agriculture of India for 10 years from 1905 to 1915, and I quite agree with what he has stated in the report. At the end of the report, he had stated one motto, that the department is for the people and for the interest of the people and should work for the people. It is this which impressed me very much.

32479. You are going to be converted to that ideal at this age?—Yes.

32480. *Sir James MacKenna*: How is it that you take such a keen interest in agricultural and rural problems?—I was practising as a pleader for many years, and I sympathise with the condition of the agriculturists. Of course, I am for the good of the people.

32481. You think you are going to do more good to the country as an agriculturist than as a lawyer?—Yes, if I am able to do so.

32482. Do you write often to the Director of Agriculture?—Yes, sometimes I know Mr. Plymen.

32483. Fairly frequently?—Yes

32484. And he writes you long replies, I suppose?—Yes.

32485. *Mr. Calvert*: I see that you make a very sad confession You plead guilty to neglecting your duties as Director of a Co-operative Central Bank and not supervising the primary societies?—Yes.

32486. Why did you neglect this important duty?—I am simply a Director I admit that a Director ought to take more interest, that he ought to go to the villages and teach the people better methods of living, and so on But that requires moving from one village to another, and I am getting old and cannot do so.

32487. You are really too busy?—Not too busy, but really too old. I have to do other work.

32488. *Sir Ganga Ram* Have you stood for the Legislative Council at any time?—No.

32489. Or for the Legislative Assembly?—Not recently I stood 3 years ago, but I am a moderate and as it was during the non-co-operation agitation I did not get many votes.

32490. The country has lost the benefit of your advice, you could have done good service?—I have many other things to do.

(The witness withdrew.)

The Commission then adjourned till 11 *a.m. on Thursday, the 27th January*, 1927.

Thursday, January 27th, 1927.

NAGPUR.

PRESENT :

The MARQUESS of LINLITHGOW, D. L (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E., C.B.

Rai Bahadur Sir GANGA RAM, KT., C I.E., M.V.O.

Sir JAMES MACKENNA, KT., C I.E., I.C.S.

Mr. H CALVERT, C.I.E., I.C.S.

Raja SRI KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Parlakimedi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. C U. WILLS, I.C.S.

Sir SHANKAR MADHO CHITNAVIS, KT., I.S.O. } (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S

Mr. F. W. H SMITH. } (*Joint Secretaries.*)

Mr. M. R. DOKRAS, Pleader, Chandur, Amraoti District.

Replies to the Questionnaire

QUESTION 2—AGRICULTURAL EDUCATION —(i) No. Because at present there is only one agricultural college for the whole of the Central Provinces and Berar in Nagpur, and two middle schools where agricultural education is given—one at Chandkhuri in the Raipur district and the second at Powarkhera in the Hoshangabad district. There is not even one agricultural school in Berar at present

(ii) There is urgent need for extension of teaching facilities in all districts of Berar.

(iii) Yes, because they would know the agricultural classes; and also their wants and would be able to command confidence in their methods of teaching.

(iv) The attendance is not as numerous as I would expect. The reasons are as follows :—

(1) The profession of agriculture has not yet risen in the estimation of the general public.

(2) The schools are yet quite new to the people and the farmers have not yet grasped the importance of and the benefits to be derived from agricultural education.

(3) They are situate at great distances from each other. They should be opened at every big town and as soon as possible agricultural education should be made a part of the present curriculum of the primary schools in the whole of the Province. Suitable text-books should be drawn up, giving simple truths about agriculture in an interesting and practical manner The students should also be given practical training in agriculture according to their age. This would help to take away the defect in present education, which makes students unwilling to resort to any practical agriculture and labour in their own fields when they are at home.

MR. M. R. DOKRAS.

(v) At present, the main incentive is the lure of Government service. It should really be one of turning himself out a good and efficient farmer and earning money and happiness for himself and his family by profitable cultivation which should be intensive and diversified so as to support him in all times and seasons.

(vi) It is not true for colleges but it is true in the case of the 2 schools mentioned above.

(vii) Modifications in the light of the remarks given in answer to (iv) above are suggested.

(viii) Every school should have a school farm or, if this is not possible, at least a school plot where practical lessons in agriculture can be given to the students. These plots and farms would provide a part of nature study and the students should be taken out at least once a week, weather permitting, for small trips for lessons in nature study, which is and essential part of all primary education.

(ix) Government service.

(x) By opening Government demonstration farms at every big town in each taluk where they and their parents can see the benefits and economic gains from improved agricultural practices and intensive farming.

(xi) Not any that I know of.

(xii) Cinema shows and night classes providing agricultural education in vernacular to well-to-do peasants may help to popularise adult education in rural tracts.

(xiii) Such a scheme should consist of :—

(1) All primary schools to be made to include practical agricultural education in the curriculum and each of them be provided with a school farm or plot.

(2) Opening of Government demonstration farms as suggested in (x) above.

Such a scheme should be administered by the District Councils and financed by these bodies with generous Government grants as regards the primary schools. As regards the demonstration plots, these should be administered and financed by the Government through the Agricultural Department.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) Formation of Agricultural Associations, Seed Unions, Seed Farms and opening of demonstration farms by Government, as well as the appointments of Agricultural Assistants each in charge of two taluks, have been successful in improving and in influencing the practice of cultivators.

(*b*) Such demonstrations should be held near fairs, bullock races and other places where people collect for some such object. Their number should be increased. They should be well advertised beforehand. It is very necessary for increasing the number of such demonstration that the staff of the Agricultural Department should be increased The present thinness of the staff makes it very difficult for an agriculturist even to meet an Agricultural Assistant once in his life.

(*c*) Such expert advice should be followed on demonstration plots and other plots of selected agriculturists and the results brought to the notice of the public by appointing a special day for showing to all neighbouring cultivators the difference resulting from the change. Example is always better than precept.

(*d*) One such striking instance of the success of demonstration and propaganda work is the spread of *roseam* cotton seed in Berar in the last ten years through the Seed Unions, Seed Farms and Agricultural Associations working under the advice of the Agricultural Department of the Central Provinces and Berar.

QUESTION 4.—ADMINISTRATION —(*c*) (i) The present staff of the Agricultural and Veterinary Services is too small. It should be increased as soon as possible to twice the present number. Junior officers of the Agricultural Department who have spent most of their services in wheat tracts should as far as possible not be transferred to cotton tracts and *vice versa*. As regards the Veterinary Surgeons, there should be one Surgeon attached to every dispensary so as to be available to the public at any time and he should not be given any touring work. The touring Assistant Surgeon should be separate from the one in charge of the dispensary at headquarters. At present, one Surgeon alone is in charge of the dispensary as well as the touring work which is also compulsory for 10 days in a month.

Some important cases cannot therefore be fully attended to and many cultivators coming from villages to dispensaries are sorry to find the Surgeon away on tour and have to go back without any help or advice. The inspecting staff is too much for the present number of dispensaries and the chief work by Inspectors done at the time of inspections consists in making account of all the medicines spent and verifying the balance. I am of opinion that the posts of Inspectors should be abolished and the present Inspectors appointed to take charge of dispensaries at big towns thus releasing some of the staff to take charge of new dispensaries The Deputy Superintendents inspect the dispensaries twice a year and that is sufficient to check the work of the assistants in charge.

(ii) Rates of transport of all agricultural produce by railways should be cheaper than the common rates and the railways should provide better facilities for transport of cattle The present wagons do not serve the purpose well and there is every danger to the animal when in the wagon while in transit.

(iii) Roads are very few in Berar as compared with its income and extent. The number of metalled roads should be increased as soon as possible to facilitate the transport of cotton to gins from inside villages.

(iv) The Meteorological Department is at present of no service to the general body of agriculturists. If the increase of stations is necessary for its practical use, they should be increased and their bulletins published in every tahsil office or post office in the rainy season

QUESTION 5.—FINANCE.—(*a*) The formation of huge co-operative associations of growers of each crop like cotton, etc., each distributing the sale of their produce over the 12 months in the year will enable the farmers to get average price for their produce and also finance them in all the months including the rainy season. This will avoid the dumping of the agricultural produce on the market all at once and thus lower the rates in the season of gathering of crops. The associations will be able to make better arrangements for housing the commodity till it is required for sale and they will also be able to get better rates for the produce through their expert selling officers

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The main causes for borrowing are —

(1) Want of prudence due to illiteracy created by having a lot of money at a particular time of the year and nothing at all at other times.
(2) Bad social customs such as marriage expenditure out of proportion of the means of each.
(3) Uncertainty of rainfall
(4) The prevalence of the gambling habit which is found in almost all villages of Berar where youthful agriculturists spend all their annual income in one or two sittings and many times their whole estate in one or two years.
(5) The rule of Hindu law which gives every person a right by birth in the family estate. This fact is an incentive to dishonest moneylenders to get pro-notes, etc., for loans advanced to boys who have just reached maturity who not knowing the difficulty of acquiring an estate by labour waste the same as easily as they got it.
(6) Love of litigation many times undertaken without any chance of success only for the sake of obstinacy and going through all the three courts of law, first Court, Appellate Court and High Court.
(7) Lack of facilities for honest and safe borrowing.

(ii) Village moneylenders and co-operative credit societies in some of the villages and in some cases the cotton brokers who advance money to their customers in the rainy season with the intention of getting interest as well as brokerage on cotton carts in the crop season.

(iii) Illiteracy; successive bad seasons due to uncertain rainfall; optimism, that the next season will be good and he will be able to pay off at once the whole debt, created by the high soaring price of cotton in some seasons; and facilities afforded by the village *sowcar* for further credit with the hope of swelling the debt and swallowing the whole estate when repayment becomes impossible.

These are the reasons that prevent repayment.

(*b*) Spread of more liberal, general as well as agricultural education will lighten the burden of agricultural debt. No special measures are necessary.

(*c*) No.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) No person should hereafter be allowed to partition a field in parts of less than 5 acres each. The breach may be made punishable under the Land Revenue Code and a fine equal to that imposed in cases of non-agricultural uses should be levied from the defaulters.

(*b*) Consolidation should not be attempted.

(*c*) No.

QUESTION 9.—SOILS —(*a*) (i) Soils can be improved by (1) drainage, simple or tile or boulder, (2) levelling, (3) green manuring, (4) rotations, (5) allowing land to be fallow for one year.

(iii) Levelling, *bunding* and not allowing land to be fallow in the rainy season.

(*b*) A field of 13 acres near Kurha, Chandur taluk, Amraoti district, was levelled and *bunded* about 12 years ago by Mr Lacchiramsingh of Kurha at an expense of about Rs. 3,000 and its soil is now in very good condition as erosion is fully checked Rain water goes out only from a patch of land 5 feet broad.

QUESTION 10.—FERTILISERS.—(*a*) Yes. Soil surveys with special reference to the constituents of the typical soils of a taluk should be undertaken and records kept for inspection and free or cheap analysis of soil of any field should be arranged for by Government at the instance of any cultivator applying to get the same done. By this means it would be easy to know how a particular field can be economically fertilised by addition of the deficient plant foods to its soil Government farms and Association demonstration plots should be utilised for trials of complete fertilisers found out by the help of the above analysis suitable for the crops to be grown on the same The results should be shown to the surrounding cultivators in the field itself and made known to the general public by distribution of leaflets embodying the results of the trials. Shops where such complete fertilisers will be sold should be opened in every taluk place. Greater use of the natural manures, cowdung and urine is already being made by the general body of cultivators, but they should be persuaded to adopt the dry earth system of urine conservation even in rainy season.

(*b*) The fertiliser dealers should be made to guarantee the proportion of available plant foods in their stuffs and if any are found below the standard guaranteed after analysis by Government experts, the dealers should be prosecuted for cheating or under some special law enacted for the purpose.

(*c*) As shown in latter part of (*a*).

(*d*) Not known.

(*e*) It is not sufficiently investigated

QUESTION 11 —CROPS —(*a*) (i) The existing crops can be improved by seed selection (using such seed as is more prolific and suits the local soil and seasons and rainfall), good manuring and using due spacing.

Cotton is the main cash crop in Berar The present seed mainly consists of *roseum*, a short stapled variety and an improvement in the strain so as to produce a good stapled variety with equal yield is necessary. Near about Arvi in Wardha district and at Tewsa in Amraoti district some local farmers have by selection improved the mixed local variety and its ginning percentage is now very high, as high as 40 per cent and more than the *roseum* variety which has recently deteriorated and gives only 36 per cent of lint. The seed of this mixture consequently commands fancy prices and sells at more than double the market price of ordinary cotton seed. Even the yellow flowered trees of this mixture produce seed cotton which has a high percentage of lint and an attempt to separate them and found a new variety having long staple and better outturn seems possible with the aid of expert departmental officers. An effort was made by the writer to send some of this seed to the Government farms for sowing to find out the good strains through the Deputy Director of Agriculture of Amraoti but as the Director of Agriculture did not approve of the plan the proposal was dropped. The Assistant to the Cotton-breeder at Dhulia (Bombay Presidency) has taken some bolls from this cotton plant this year.

(ii) Ground-nut is a new crop which is well adopted to Berar soil season and deserves encouragement at the hands of the department. It produces good fodder and leaves the land richer by the addition of nitrogen It requires less labour and very little weeding and becomes ready in 100 days which is the period of good rains also. It can grow comparatively well in light soil and gives a

good outturn in good soil as high as 2,000 lbs. per acre being known to the writer. Especially in these times of cheap cotton, ground-nut should replace at least half of the present acreage of cotton. In Khandesh, it has already encroached to that extent on cotton cultivation and the cultivators in those parts are not so hard hit by the fall of cotton prices as they have got ground-nut to rely on. The writer has introduced the small Japan variety in Chandur taluk since 1916 in which year he sowed a field of 28 acres under ground-nut and the seed he distributed has steadily increased in villages having light soils, *e.g.*, Amla which has about 1,000 acres under ground-nut this year. The only difficulty is the high price of seed in the first year. The trouble about pigs can be done away with by planting a large acreage in every village, cultivators in Amla now do not keep any watchmen on any of the ground-nut fields

(iii) Seed distribution can be well managed through Agricultural Associations which are in existence in almost every taluk in the Province.

(iv) Damage by wild animals is only found in villages which are near reserved forests and it can be lessened by generous grant of licenses for firearms in such villages.

(*b*) No.

(*c*) Mentioned under (*a*) (i).

QUESTION 12.—CULTIVATION.—(i) Generally, cultivators harrow their field with a harrow dragged by one pair of bullocks. The first harrowing is done by a bigger harrow drawn by 2 pairs of bullocks and the second by the small harrow as at present. This will give greater mulch than at present and the cotton stalks also will be completely uprooted from the field by the deeper cultivation. Uprooting the cotton stalks by hand and then harrowing gives still better results and also checks the spread of certain diseases such as root-rot. The field also becomes free from living plants eating up nourishment. Because of harrowing you have to wait till the plants are dried and can be cut by the harrow. The expenses of uprooting this side are about Rs. 2 per acre but they more than balance the advantage from easier harrowing and better crops next year.

(ii) I would suggest sowing a mixture of *juar* and *urid* (*juar* 2 lbs. and *urid* 6 lbs.), per acre instead of the present mixture of *juar* and *mung* (*juar* 3 lbs. and *mung* ¼ lb. per acre). The greater incidence of *urid*, a leguminous crop, improves the soil and benefits the crop of the next year and, *urid* being an early maturing crop, *juar* suffers no damage by the *urid* crop though sown together, *juar* being the only crop growing in the field after 2½ months of sowing. *Mung* gives better fodder than *urid* and therefore some area may still be sown with the *juar-mung* mixture as at present, *mung* being increased to 1 lb. per acre. The writer does not approve the idea of the local people who sow *tur* lines in every cotton field. *Tur* should only be sown in fields of cotton which do not produce cotton plants higher than 1½ feet, the better fields being sown with cotton alone. The present rotation is *juar* and cotton in alternate years in fields which are not manured, manured fields being sown with cotton successively for 3 or 4 years. I would suggest a rotation of *juar* acreage ⅓rd, ground-nut ⅓rd and cotton ⅓rd, the cowdung manure being given to ground-nut and some fertiliser (complete) to cotton after sowing, *juar* being grown on the residue of the manure given in these 2 years.

QUESTION 13.—CROP PROTECTION, INTERNAL AND EXTERNAL.—*Juar*: Smut in *juar* can be controlled by saturating the seed in a solution of coppersulphate of the required strength, but the parasite plant known as *taloop* in these parts cannot be controlled by this method or by any method known to the writer.

Cotton. Wilt can be controlled by rotation, and by planting yellow flowered varieties and these methods are efficacious.

Root-rot: Very few people know that this is a disease caused by a fungus in the soil and can be controlled only by rotation, uprooting the stalks and burning them.

Boll-rot: There is no measure by which boll-rots are protected in these parts.

The cotton caterpillar made havoc in some villages of this taluk in the growing season of 1925 and no measure efficacious and practical was found for ridding the fields of this pest that year. The department suggested the method of catching worms by hand and trampling them or drowning them in

a pot full of kerosine and water but this is not practical when fields after fields are affected. Some sort of dusting device and a suitable poison to dust these insects to death can be the only practical solution as is done in America for the boll weevil.

QUESTION 14.—IMPLEMENTS.—(*a*) In the opinion of the writer, the experiments with tractor ploughing are not popular in this side of the country because people do not generally consolidate the soil after ploughing the same, but watch till the rains do the same and thus have to wait for a long time to sow after the coming on of the monsoon. This trouble will be avoided if new implements of the "cultipacker" type which are available from many firms are more generally introduced and people made to understand the necessity of again packing the soil after ploughing so as to make a proper seed bed ready to be sown with the first approach of the monsoon.

(*b*) (1) Opening of demonstration farms at every tahsil town and the use of such improved implements on these farms.

(2) Opening of shops by Taluk Agricultural Associations where such implements and their spare parts can be made available for ready purchase by the cultivators at the price of the manufacturer, the commission being always sufficient to make up the expense of bringing the same from the manufacturer and keeping it in stock for sale.

(3) Opening of mechanical schools where mechanics who can do small repairs to agricultural implements can be trained. Every town should thus have its own shop of mechanics ready to set right the machines working in the town. Want of such mechanics is at present at the root of the unpopularity of machines in agriculture, because the farmer who buys a valuable machine becomes the laughing stock of the whole village when the machine becomes idle through slight disrepair and it is not possible to find out any one near at hand to set matters right.

(*c*) The high railway freight which comes to nearly 12 per cent of the value of ploughs bought from Messrs. Kirloskar Bros. in Satara district to Chandur by railway is a difficulty in the matter of the distribution of agricultural implements for sale throughout the country. It should be reduced to 5 per cent or even lower if possible.

QUESTION 15.—VETERINARY.—(*a*) It should be under the Director of Agriculture.

(*b*) (i) The veterinary dispensaries are under the control of the District Boards. This system works well.

(ii) The need for expansion is not yet keenly felt because people are not yet habituated to their use. But as they will gradually know their advantages, the expansion would be necessary and would be taken up.

(iii) Absolutely not.

(*c*) (i) Agriculturists do not yet make full use of the dispensaries but it is due to their ignorance. As education would become more general, more resort would be taken to cure the animals through dispensaries.

(ii) There are no touring dispensaries in this district. The Veterinary Surgeon goes on tour for ten days in the month and the dispensary is left in charge of the compounder who is sometimes quite new to the work. Cases coming in the Surgeon's absence cannot therefore be properly treated and people become dissatisfied. This is one of the important reasons why fuller use is not possible of these dispensaries. The touring assistant should always be different and the dispensary should not be allowed to be without a doctor in charge.

(*d*) I would not advocate legislation dealing with any of the subjects, for as yet the main body of cultivators are not sufficiently educated to understand the importance and necessity of such restrictions.

(*e*) No.

(*f*) No obstruction in the way of popularising preventive inoculation. No fee is charged.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) The grass and fodder including straw of cereals and stems and leaves of pulses and the grain and corn used as cattle food in this Province should be analysed and their nutritive constituents as cattle food determined by Government experts. Suitable combinations including addition of mineral constituents may be suggested for feeding milking

cows and buffaloes and dry cows and buffaloes and growing calves and bulls separately. Government should encourage shopkeepers who will sell such combinations of feed guaranteed to contain sufficient nutriment for the above animals by exempting them from income-tax and other facilities.

The use of silos should be made compulsory on all Government farms operating in the Province so that the people in the surrounding villages may know the advantages arising from silos.

(*b*) The forest area reserved for grazing is overstocked with cattle in the rainy season and consequently the pasture is not sufficient for all cattle admitted in the forest. The animals do not get sufficient grass to eat and the overcrowding also results in the outbreak of contagious diseases in the forest area. The number of animals should therefore be restricted to that which can be properly fed on the acreage available.

(*c*) May, June and July. Four more weeks elapse before young growing cattle begin to thrive.

(*d*) Growing fodder crops such as thick *juar* for fodder may be practical but is not practised by any cultivator this side as yet.

(*e*) By showing the benefits of the improved methods on Government cattle-breeding farms and dairies.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(*b*) Poultry keeping would be the best subsidiary industry which should be adopted by agriculturists.

(*c*) Want of suitable poultry farms where good stocks are available for sale and also want of instruction in the usual school curriculum as to how to manage poultry farms.

Suitable Government poultry farms should therefore be opened at every district place at first and gradually at every tahsil town where good utility poultry breeds would be available for purchase by the agriculturists, and also where instructions can be given to pupils in the business of poultry management.

QUESTION 20.—MARKETING.—(*a*) No.

Cotton: There is a Cotton Market Law in force in Berar, but it does not provide for the appointment of any members from the agriculturists on the committees which manage the cotton markets. The law should therefore be modified and suitable representatives from the agriculturists be nominated to serve on such committees either through Taluk Agricultural Associations or directly through the Deputy Commissioner.

(*b*) *Cotton Market*: There are no facilities for the cotton cultivator to sell his produce slowly so as not to glut the market in two or three months by the whole produce. This glutting forces the prices down to their lowest level at a time when most of the produce is sold by agriculturists to merchants. This can only be remedied by the establishment of a large number of co-operative marketing societies for cotton as are found in the American States where farmers can take their bales of cotton as they are pressed to such societies to be classed and stored by such societies which advance them a fixed percentage of the value for their current expenses at low rates of interest and by slowly selling the cotton at appropriate times of the year manage to get the best average price for every class of cotton stored with them by each of their members. Every effort should therefore be made to bring such societies into existence as soon as possible.

(*d*) Yes. They are very necessary and cotton market news, Indian as well as overseas, crop returns and complaints about Indian produce should be circulated free to every cotton market and tahsil office to be published therein.

QUESTION 23.—GENERAL EDUCATION.—(*a*) The existing system of elementary and middle school education creates an indifferent and many times an aversion in the minds of the pupils for agricultural work as there is no reference to such subjects and their importance in the school curriculum. The curriculum should therefore be changed so as to include lessons on agriculture and its elementary principles slowly developing the theme of agriculture in all its branches, theory as well as practice, as the students advance in the school courses. Such students will be gradually trained to take greater interest in agriculture and its practices and will not remain disinterested as the students of the present day. The agricultural course should be compulsory and included in all the

elementary and middle school courses. But the higher and collegiate education may be divided into several branches as at present including agricultural and mechanical side for those who want to specialise in the same. More funds should be spent over agricultural teaching schools and the training of teachers for such schools.

(*b*) (i) The above method will improve the culture and ability of agriculturists of all grades while retaining their interests in land.

(ii) The present compulsory education in the rural areas being of the old type without any reference to agricultural subjects does not satisfy the pupils of such areas and their guardians are rather unwilling to send their wards to such schools.

(iii) Parents come to know of the ineffectiveness of such education to fit the students for the profession of agriculture and therefore the number of boys who pass to the higher classes gradually diminishes till very few pass the fourth class.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(*a*) Institutions like the Social Service League of Bombay should be established through Government efforts in all important villages and the members of league slowly trained to improve the hygiene in the rural areas and establish crêches for children of the mothers who have to go in the fields for weeding cotton, picking and other field work, keeping their infants in the care of children aged 3 or 4 and sometimes none at all, and do such other works as would promote the general well-being of agriculturists.

(*b*) Yes.

Scope· Discovering the main features of village farming, *e.g.*, the exploitation by moneylenders, the thriftlessness of the farmers, absence of supplementary occupations, ignorance of improved methods of cultivation, very poor livestock, litigiousness and absence of co-operative facilities.

Methods· Appointment of influential committes from among agriculturists and experts in co-operation.

Oral Evidence.

32491 *The Chairman*· Mr. Dokras, you are a pleader of Chandur, District Amraoti, Berar?—Yes.

32492. We have your note of the evidence you wish to put before us; would you like to say anything at this stage, or shall I ask you questions?—In view of the Conference which is to take place to-morrow between this Commission and the Local Government, I should like to say this: Last time education and agriculture were under two separate Ministers; I think, if possible, they should, being allied subjects, be placed under the same Minister this time; that is the main thing I should like to impress on the Commission.

32493. What is your own association with agriculture? Are you a farmer?—Yes, I cultivate nearly 200 acres belonging to me and I have 200 acres on lease.

32494. Is that land cultivated by hired labour ?—Yes, all hired labour.

32495. Do you manage that yourself?—Yes, I have been farming since 1916.

32496. Are you practising at the Bar at the moment?—Yes.

32497. Do you find you can do both?—Yes.

32498. What about the area that you lease?—I am taking that on lease because the superintending charges are the same.

32499. What type of land is it that you farm yourself?—Black cotton soil; some of it light and some of it is very good.

32500. Have you any irrigation?—No.

32501. What are your principal crops?—Cotton and *jaur*, and a little wheat.

32502. Where do you market your cotton?—At the Chandur cotton market.

MR. M. R. DOKRAS.

32503. Are you satisfied with that market?—No. At present the members of the market committee are nominated by the Deputy Commissioner through the Tahsildar, there are on that committee no representatives of the agricultural classes. The law excludes representatives of the agricultural classes from that committee; I submit the law should be changed so that there should be representatives of the sellers and the farmers on the market committee.

32504. Do you not think it would be very difficult at this stage of development in the Province to find farmers who could attend the meetings and who would have knowledge and experience?—There is an Agricultural Association for the taluk; if they inform us, we will put in two members who will be willing to attend, I think there would be many willing to do so.

32505. Failing the existence of such members, do you think the Agricultural Department might have a representative to represent the cultivators' interests?—Of course that would be better than the present state of things. Last year we subscribed nearly Rs 100 from the Agricultural Association to provide for telegrams being sent from the Bombay market; it would, of course, be of immense benefit both to buyers and cultivators to know the Bombay rates before the market opened; but this year, though I pressed for the public exhibition of the rates on a board in the market, the merchants, thinking their secrets would be divulged and they would not be able to take advantage of the market, opposed it. If there cannot be representatives of the cultivators on the market committee at present, a representative of the Agricultural Department would do something. The representatives at present nominated by the District Commissioner are mainly merchants and are really representatives of the ginning factories.

32506. You make various suggestions of a constructive nature for the extension of the agricultural services and for the extension of the system of agricultural education; have you thought at all as to who is going to pay for all this?—Of course, the provincial budget.

32507. Would you suggest more taxation?—In the present state of things that is not possible, because the budget this year will be a deficit budget, and the state of the farmers in the Province is very bad on account of the price of cotton having gone down.

32508. So that I judge that your scheme must be to divert funds at present being spent in other directions, towards agriculture; is that your idea?—Yes; for example, in our taluk there are three Sub-Inspectors working under the Excise Department, while there is only one Agricultural Assistant for two taluks, the Agricultural Assistant has to look after an area of nearly 60 miles long and 30 miles broad, while the Excise Inspector has an area of only about 10 miles square, if the number of excise officers were reduced and the money diverted to agriculture, I think more good would be done to the cultivators.

32509. *Sir Henry Lawrence*: What would be the loss in excise revenue?—There would be no loss, the Sub-Inspectors only do checking work, a sort of C.I.D. work.

32510. *The Chairman*: You suggest that primary schools should be made to include practical agricultural education?—Yes, that is the main thing I suggest in the beginning.

32511. Do you not think the primary schools are best left to teach literacy to small children?—But agriculture is the only industry in the Province, practically 90 per cent of the people in Berar live on agriculture; it is not at all industrial; therefore agriculture is as necessary as literacy and even compulsion should be introduced.

32512. Do you not think literacy itself would be a great contribution towards agricultural efficiency?—But we are finding that the students who have been taught during the last fifty years are not willing to do manual labour; because they are literate, they think they should not touch agricultural implements. That would be avoided if from the beginning children were taught agriculture and learned that agriculture is respectable.

32513. I gather that it is your view that the Agricultural Department has done good service to the cultivator in certain directions?—Yes, but I think it could be enlarged. The cotton at present grown in Berar is *roseum* cotton; but we are now

finding that *roseum* is deteriorating, that is to say, the lint percentage is declining. I am cultivating other varieties which are not fixed varieties, but are mixtures; during the last two years they have given from 40 to 42 per cent of lint. As I mentioned in my note, I made an attempt last year to send those mixtures to the Agricultural Department with a view to finding out the more prolific and better varieties; but it was not done because the Agricultural Department did not think it a good thing to experiment with these mixed varieties. But I submit that when there is an Agricultural Department with an Economic Botanist and other officers, this sort of mixture should be investigated, and that as the main variety of *roseum* has decreased in lint percentage such other good varieties as are in existence should be fixed, and further investigations should be undertaken with regard to them so that the good strains may be selected fixed and distributed. I myself have not put any land under *roseum* for the last four or five years, mainly because I get 40 per cent of lint from the other varieties, and from one variety I can even get 42 per cent. Some people say it is rather a short staple cotton, but the cotton grown in Berar is mainly short staple; the *roseum* staple is, I think, nearly 4/8th inches so that the short staple is not a very great difficulty, I find the lint percentage of my mixtures is greater and therefore I think they should be investigated and taken in hand

32514. On page 480 you suggest that the railway freight rates for agricultural produce should be reduced. Is it your idea that the railways ought to carry agricultural produce at a loss?—Not at a loss, but at least they should not make any profit. 12 per cent of the price at present is the freight that we have to pay, I think it might be reduced to 5 per cent.

32515. Do you know at all what proportion of the total carrying trade of the Indian railways is in agricultural produce?—No, I am sorry I do not

32516. If you were concerned with this matter from the angle of the railway, you would have to pay great attention to that, would you not?—Yes, I should.

32517. Will you just tell the Commission what your own experience of co-operative societies may have been?—I am not connected with co-operative societies at all, but one thing I can tell you that at present the societies have rather degenerated; they have practically supplanted the moneylender and have become a sort of moneylending business. If a man wants Rs. 10,000 or Rs 20,000, he gets nine more people and between themselves they get Rs. 20,000 from the Central Bank The main purpose of co-operation is that only the necessary amount should be given to the members and expenses should be curtailed, but those principles are not properly taken into consideration. What has happened is that the moneylending business has been transferred from the Marwari and other sorts of moneylenders to the co-operative society. The main consideration that I should like to impress upon the Co-operative Department is that they should see that the co-operative societies look to the interests of the members and avoid waste. If a man requires Rs. 1,000 for a marriage, he should not be given that sum if his social status does not justify that expenditure; but that is not taken into consideration by the co-operative societies, they give credit practically up to the full value of the borrower's estate, and then law suits are instituted. As a pleader. I know that co-operative societies very often execute their decrees onwards in the courts as creditors. The co-operative societies do not perform their main function.

32518 On page 482 of your written evidence, you suggest the sowing of a mixture of *juar* 2 lbs and *urid* 6 lbs. instead of the present mixture of *juar* 3 lbs. and *mung* ½ lb. per acre. Have you tried that mixture yourself?—Yes. I have been trying it for the last three years.

32519. Are you satisfied with it? Yes, the next year's crop is better after this *urid* mixture than after the *mung* mixture.

32520 Have you attempted any mechanical ploughing on your own estate?—Yes; I have used "the Turnwrest" plough

32521. With bullocks?—Yes, with 4 bullocks. But I think many people do not understand the importance of consolidating the soil after ploughing. The soil requires to be consolidated even after it is ploughed with an iron plough. In these parts, the people do not understand this aspect of cultivation and hence they suffer. They have to wait till they get rain for the soil to consolidate and then they sow. I, therefore, say that after ploughing there should be harrowing with the help of an instrument called the cultipacker so that the soil may be consolidated and then the crops may be sown with the fresh approach of the monsoon.

32522. How many bullocks have you got on your estate?—I have 16 pairs.

32523. Do you have difficulty in feeding them in the season of fodder shortage?—have ample fodder; I always store it for one year in advance.

32524. How do you store fodder?—In heaps.

32525. Dry?—Yes, dry. I do not have silage.

32526. You are like many other people who have come before the Commission to give evidence. You are strongly in favour of silage; you go so far as to say that the use of silage should be made compulsory?—That is the only way by which the cultivators can be made to see the benefit of it

32527 In spite of your confidence in silage one finds that a progressive and well-informed gentleman like yourself refuses to make any silage?—But we want an engine for the purpose; without an engine the silage cannot be made and I have no engine at present.

32528. Are you breeding any of your own bullocks?—Yes; I even sell them.

32529. Have you got racing studs?—People purchase the bullocks from me and some use them for racing. They are fast trotting bulls and so they are often bought for that purpose.

32530. *Sir Henry Lawrence* What would be their price?—Generally I get Rs. 500 per pair and in a good season I can get something like Rs. 700 or Rs. 800.

32531. *The Chairman*: I see you are interested in poultry too, is that for egg laying or cock-fighting?—It is only for egg laying. There was tick trouble in my cattle and my herdsman said that if I kept poultry that would disappear. Being a Brahmin I cannot keep poultry for my own use. So in order to avoid the tick trouble in cattle I am keeping poultry for the last three years. For some time I was having country bred fowls but now, when I know that any way I have to keep poultry, I started keeping a good breed

32532. Have you had a great deal of trouble with the chicken ticks?—No.

32533. Do you use any special perches?—Yes, I have got a special perch, a bamboo resting on supports, with a tin can full of rock oil and water

32534. I dare say you know the position: It is that while chickens devour the ticks when they go out in the day, the ticks devour the chicks in the night?—I do not think so.

32535. *Prof. Gangulee* Do you sell your poultry?—I sell only the eggs.

32536 *The Chairman* Have you employed any trained managers on your estate?—No, I employ only the ordinary people who are not educated.

32537. How many days in a week can you find time to look to the business of your estate?—I go there at least once a fortnight, in the rainy season I go there at east once a week.

32538. So that you must depend upon your servants entirely?—Yes; but I employ only such people as can manage according to my instructions.

32539. Do you attach importance to a scientific agricultural training in your management?—Yes; I would be the first man to advocate it. I myself graduated in botany and zoology from Wilson College, Bombay, and I know the importance of science and scientific management in agriculture; but then it is very difficult to get such people at present.

32540. Otherwise you would be inclined to look for managers from amongst the students of this College?—Yes, I would be the first man to look for them.

32541. *Prof. Gangulee*: Why do you think that *roseum* cotton is deteriorating?—Because it has less percentage in lint. I have enquired from many people and they are of the same opinion.

32542. Have you asked the Director of Agriculture about it?—I had a talk with Mr. Allan when he came to Chandur, where there is a demonstration plot.

32543. From where do you get your seed for your cotton?—There are two men one in the Arvi tahsil and one in the Chandur tahsil who select their seed. They have been doing so for the last twenty or twenty-five years and their cotton has a ginning percentage, at present, of 40 per cent. I have got that seed with me.

32544. I want to know whether you get any seed from the Agricultural Department?—I got seed of *roseum* in the beginning, but as it has deteriorated I have discontinued it.

32545 Do you get any other seed from the department at present?—No.

32546. On page 480 you say, "facilities afforded by the village *sowcar* for further credit with the hope of swelling the debt and swallowing the whole estate when repayment becomes impossible." Would you amplify that a little?—Supposing a man has got a field worth Rs. 2,000. The creditor gives the man advance after advance till the whole debt with interest accumulates to Rs. 2,000; then he brings a suit, repayment becomes impossible, the land is attached by the court and the creditor himself purchases the land for that money. There are moneylenders in my part of the Province who actually come to the houses of the people and advance money. One reason for this is that in 1918-19 cotton reached very high prices and the value of land went up That was why people were very much after Berar fields and moneylenders came and advanced money, with the result that repayment afterwards became impossible and lands passed into their hands.

32547. When you get your seed, do you distribute it to your neighbouring farmers?—Yes, to as many as can buy from me.

32548. For cash?—Yes, I do not do any moneylending or seed lending business

32549 In answer to a question put by the Chairman you said that you had about 200 acres of land and you utilised hired labour. What do you pay the labourer?—Rs. 150 per year I pay them in kind and the value of it comes to Rs. 150 per year.

32550. *Mr. Calvert*: Could you let us know to what extent the land is passing into the hands of the moneylenders?—I cannot give the exact figures. But I know that in villages round about Chandur at least 10 boys have been ruined by such advances by the moneylenders and have become insolvents.

32551. You think it is taking place to an appreciable extent?—Yes. Supposing a man aged 40 or 50 dies and he has got a son aged about 18, the boy gambles and spends the whole amount in one sitting I could name instances. That is the first thing that should be remedied, and these youths should be protected.

32552. Would you be in favour of something on the lines of the Punjab Alienation of Land Act?—I am against such an Act, because there are many people who are intelligent and do not want this sort of help and if we enact a law of this nature, we will be curtailing a great deal the rights of all. Therefore, I suggest that this evil of gambling should be put an end to and there are other ways of doing it; we can make the Gambling Act, now applicable only to big towns, applicable to all the villages.

32553. *Sir Henry Lawrence*: What kind of gambling are you referring to?—They play with cards, what we call *uthar* and also *minaf*. I do not know much about these things. Some times they bet something like Rs. 1,000 at one sitting. There are players and sub-players. There are many youths who have been ruined within one year. The moneylenders take pro-notes from these youths for Rs. 1,000 although they actually advance Rs 500. That means that he has a chance of getting Rs. 1,000 at one sitting and he borrows Rs. 500 although he gives a note for Rs 1,000. That is the sort of evil that is going on. I wrote my replies to the Questionnaire mainly with the idea of doing something for these persons and that is the most baneful evil that is at present going on.

32554. Do they gamble on rainfall?—Not the cultivators, only the Marwaris in Amraoti and Akola.

32555. And do they gamble on horses?—No; not on our side

32556. *The Chairman*: And bullocks?—No; it is on cock-fighting.

32557. *The Raja of Parlakimedi*: Do they not gamble on bullock races?—No, only prizes are given sometimes. That is only a question of enhancing your prestige if your pair wins.

32558. Buying and selling of cotton?—No; that is trading. The cultivators do not do that; only the Marwaris go in for it. They purchase cotton with the hope of the rates rising afterwards. As I say that is done only by the Marwari moneylenders.

32559. *Dr. Hyder*: Is there no *satta*? Do the moneylenders sit down and take a hand in the game of cards?—No: generally they have to sue such persons who cannot pay. This is all done outside the gambling den so that evidence outside the place may be available in the matter.

32560 *Mr. Calvert*. In Berar do Brahmins lend money?—Brahmins do lend money sometimes; there is no special reason why they should not.

32561. Are they not prohibited by their religion?—No, only Mahommedans are.

32562. I think Brahmins are also forbidden by your *shastras*?—No. I am quite sure about it. We can recover up to *damdopat*. The Hindu law forbids the recovery of interest of more than double the amount of the principal, but it does not forbid moneylending at all.

32563 Does the Usurious Loans Act apply to Berar?—No.

32564. Would you like to see it applied to Berar?—The Usurious Loans Act alone would not prevent this gambling. It may help a good deal. Supposing that a man takes a note for Rs. 1,000 by giving only Rs. 500. In such a case of course something may be done, but the habit of gambling cannot be stopped altogether. That is what I am trying to get at.

32565. *Prof. Gangulee*. Have you tried to apply this Usurious Loans Act?—It does not apply to Berar.

32566. *Mr. Calvert*: In reply to the Chairman you made some rather severe remarks about co-operative societies Were these remarks based on your own inspection of societies' books?—No, but I am personally acquainted with some of the members. I know some members of societies who have practically become insolvents in three or four years and still have about Rs. 20,000 due on mortgages to the societies.

32567. You say that consolidation should not be attempted. What is your objection?—The objection is that you would have to acquire the land

32568 Why?—How can it be done otherwise? I have no other idea

32569. You have not studied how this work could actually be carried out?—Nothing that I have read about it anywhere else indicates that it can be done except by way of acquisition The penalty that I have suggested is very easy and a very novel one and I think myself that it will put a stop to this evil. Suppose a man cultivates a field of less than 5 acres he should be charged a penalty for non-agricultural uses, so that we practically will get rid of the evil and further fragmentation will be stopped.

32570. *Sir Henry Lawrence*: Are you in favour of the total prohibition of alcohol?—Yes.

32571. How would you replace the revenue that you would lose?—Of course I do not want absolute prohibition at once; it should be done gradually as funds permit.

32572. Would you raise the taxation on other sources to make up the loss?—Yes; if it cannot be managed otherwise.

32573. Do you know what the excise revenue amounts to in this Province?—I think it must be more than one crore; I do not know the exact amount.

32574. It is Rs. 160 lakhs?—Yes

32575. And the total land revenue is only 50 per cent more?—Yes, the difficulty would be of getting the income in some other way. Still I should think the staff may be decreased. There are three Sub-Inspectors of Excise in each taluk and you can reduce their numbers.

32576. Do you know what the expenditure of the Province is in bringing in these 160 lakhs on excise?—I do not know.

32577. It is 7 lakhs of rupees to bring in 160 lakhs. Is that disproportionate?—We could cut down a part of it and as I have said in my written note we can cut down the post of Excise Inspectors and also the posts of many Sub-Inspectors of Excise We could then have some money for our Agricultural Assistants. The demonstration that is at present being carried on, by the way, as this question has now arisen, is very meagre. As a matter of fact, the Assistant does not meet many of the agriculturists even once in a year.

32578. Do you think that if you reduced your inspecting staff of excise you would advance the cause of temperance and the prohibition of alcohol ?—That staff does not help in any way in abolishing the thing.

32579. It does not prevent people from illicit distillation ?—That thing of course could be looked after by the decreased staff.

32580. How are you going to look after it if you take away the staff ?—The *patels* can report occurrences and even at present detecting illicit distillation is practically managed by the *patel* and the Sub-Inspector of Excise The Sub-Inspector alone cannot do anything. The information is given by the *patel* and his subordinates.

32581. *Sir Ganga Ram*: I am glad to see a progressive agriculturist. But after you took your degree in botany and zoology, what use did you make of these two sciences in law? Why did you take to law? Were those sciences useful for law?—Because the Bombay University had that as an optional subject. I had to pass my B.A. to become an LL.B.

32582. What I meant to ask you was why you picked these two subjects? With what view did you take these two subjects ?—I had to pass the B.A. degree examination, not of course with the intention of going in for agriculture.

32583. Did you make up your mind about going in for law before you went up for your B.A ?—Yes.

32584. These two subjects were, I suppose, the easy line of least resistance ?—No; that cannot be said to be the the fact in my case

32585. We wish to bring this to the notice of the University, that you can get through these two subjects very easily ?—No, because I was the first scholar in my college in the two years where these subjects were studied by me I was also the first scholar in the Wilson College for all the four college years.

32586. You hold 203 acres on lease ?—Yes.

32587. On what terms ?—Nearly Rs 3,000.

32588. You pay the owner ?—Yes.

32589. Who pays the revenue ?—I do.

32590. Then it costs you altogether about Rs. 4,000 ?—No; the revenue is about Rs. 400.

32591. What is your net profit ?—Last year I had no profit and this year there will be a loss to me, both being bad years.

32592. You cannot make more than Rs 30 an acre altogether gross ?—In the last two years I could not, but it would be Rs 25 an acre gross in an ordinary year.

32593. So you make Rs. 5 an acre net ?—Yes, in ordinary years.

32594. You said, I think that you would be the first man to engage a man from the Agricultural College Can you afford to engage him if you are not doing well yourself ?—For the last two years the position has been very bad for cotton.

32595. On what pay could you afford to employ students from the Agricultural College ?—On Rs 50.

32596. Would you have graduates in agriculture or would you have diploma holders ?—I would not employ a fresh graduate. I would get a man who has had some experience of managing an estate.

32597. That is to say, the graduates must first take a training in managing an estate and then come to you on Rs. 50 a month ?—Yes, because I will not be able to entrust the whole management to a *kutcha* man.

32598. What has he to do then ?—He will be under training under me for managing the estate for some years and then he will be paid the full Rs. 50.

32599. You do not offer bright prospects for agricultural education. You only offer the man Rs. 50 a month after training ?—That is what I can afford, perhaps bigger landlords would be able to pay more.

32600. You say *roseum* is deteriorating. Does it deteriorate in yield or in quality ?—In lint percentage.

MR. M. R. DOKRAS.

32601. Altogether the whole yield is not bad?—No.

32602. What is the yield per acre?—It depends on the season and the soil and manure. In good soils with good season and heavy manuring every variety would yield more than one *khandi*, 784 lbs., that is 28 maunds.

32603. What is your maund?—28 lbs: that is the weight by which it is called in Chandur, that is to say 28 lbs. to the maund and 28 maunds to the *khandi*. That would be the best outturn in one acre.

32604. Do you call this a good yield?—Yes.

32605. What is the proportion of the seed to lint?—Approximately one-third in the bazaar variety. My variety is superior. This year I got about 40 per cent.

32606. So that it has not deteriorated in the yield?—That is not *roseum*; I am not sowing *roseum* at all for the last 5 years; I have my own variety.

32607. What is your variety?—I have got a mixed variety.

32608. What is the name of your variety?—There is no name for it. It is a mixture of many varieties of cotton. Only the bolls have been selected for the last twenty or twenty-five years by the man who has brought it into existence.

32609. It is sold as a mixture?—Yes.

32610. *Sir Henry Lawrence*: Under what trade name?—There is no particular name; it is *sarki*, cotton seed of a particular kind.

32611. *Sir Ganga Ram*: You said in answer to my colleague's question that the Gambling Act should be applied to cultivators who play cards?—Not only to cultivators but to all Berar people; that means wherever this evil is in existence.

32612. Should not the Gambling Act be applied to bridge playing and to clubs?—No.

32613. Why not? The same argument applies?—Clubs may be exempted.

32614. Will your Legislative Council pass that sort of exemption?—I have not thought about it at all. I have laid the evil before you, and it should be checked in the best way possible

32615. Do you not think that total prohibition will lead to illicit distillation?—I am conversant with the state of things in America, where total prohibition has created bootleggers

32616. And they are now coming back to the former state of things?—They are not yet coming back, but there is a lot of trouble

32617. Do you want to apply prohibition in the case of liquor only, or do you want it to be applied for *charas*, *ganja* and opium?—*Charas* and *ganja* are not liquor.

32618. You want to stop only liquor?—Yes.

32619. *Sir Henry Lawrence*: Not drugs?—I have not thought about it. Thi question has come as a side issue: I only said that there are 3 Sub-Inspectors of Excise in one taluk, and their number should be reduced.

32620. Do you think that will pay for the increased number of schools that you advocate?—Some reduction in the staff may be made.

32621. What should be the reduction?—One Sub-Inspector for a taluk would be sufficient, according to my view.

32622. Should not they put an extra income-tax on lawyers?—Why on lawyers alone?

32623. Supposing the money had to be found somehow, and such a proposal were put forward, would you agree to it?—I might agree. Supposing I am a philanthropist, I may agree to anything if this evil can be stopped by my self-sacrifice.

32624. Most of you lawyers are in the Legislative Council, will they pass it?—No, now they are not in the Legislative Council.

32625. What is a cultipacker?—It is an instrument by which the land can be consolidated after ploughing. It is of American manufacture, and can be had from Messrs. Macbeth Bros. & Co.

32626. In this Province how far apart are the *ganjes* where the cultivators can go and sell their cotton?—In the Chandur taluk there are 2 markets, 10 miles from each other. From the farthest end of the taluk, each is at a distance of 18 miles. The taluk is triangular, and the markets are in the centre.

32627. The cultivators have not to go more than 18 miles?—No.

32628. The evidence before us was that in some cases they have to go 100 miles?—That may be in other taluks. In Chandur they may have to go 20 miles, if we take the farthest end of the taluk. There are other markets nearby, such as Arvi and Amraoti, and some people go there.

32629. I understand that you are keeping poultry for the purpose of egg selling?—I keep them for catching cattle ticks.

32630. Is that the only object?—Yes, and because I had to keep some poultry for that I preferred to keep the best.

32631. Would you sell the chickens?—I may, if there are too many.

32632. But that would go against Brahminism?—As at present constituted it would not go against it.

32633. Have you thought of carrying poultry keeping one step further by going in for incubators?—I have not got incubators, but I have got one foster-mother; I have purchased it for Rs. 60.

32634. Do you find any difficulty in getting your men to handle poultry?—They do not keep the yards clean, so I have got a separate poultry house.

32635 Are there any religious objections?—Our women object. Of course the religious Brahmins may object.

32636. Do your servants object?—No

32637 What class of servants do you employ?—*Kunbis* and others.

32638. There is no objection on their part?—No.

32639. *Prof. Gangulee*. Where do you sell your eggs?—Chandur is a taluk headquarter, and they are absorbed there.

32640. *Sir Ganga Ram*: Have you any objection to depressed class boys sitting in the same school with the other boys?—Not at all.

32641 Personally you may not object, but would your co-religionists object?—There may be some who would object, but I would not join them.

32642. Are your tenants mostly depressed classes?—Many of my servants are *Mahars*

32643. What class do the tenants belong to?—I have no tenants; I cultivate the land myself.

32644. You have no ploughmen?—I have servants, of whom 5 are *Mahars* and 10 belong to other classes.

32645. *Sir Thomas Middleton*. How long is it since you took your degree?—I took my B. A degree in 1905 and my L..B in 1907.

32646. How long have you been farming?—For 10 years, since 1916.

32647. You make a ecommendation that junior officers of the Agricultural Department who have spent most of their services in wheat tracts should as far as possible not be transferred to cotton tracts and *vice versa*. What leads you to make that recommendation?—The Province is a big one, and when I thought over the question, I took into consideration the whole Province. I know that the question of wheat production is quite different from the question of cotton production. In a general way, I have arrived at that conclusion. I cannot give you any specific instances.

32648. It is based on a general principle?—Yes.

32649. On page 480, you say that the spread of education will lighten the burden of agricultural debt. In what way will that happen?—If they are educated they will be more economical; they will not spend as much as they do in gambling and marriage ceremonies, and they will not incur such heavy debts.

32650. On the next page, you make the suggestion that the land should be *bunded*, and not allowed to be fallow in the rainy season. What is behind that suggestion?—I think the question referred to the washing out of land, and how it can be prevented. If the land is level, the flow will be easy. If the land is *bunded*, the flow of course will be at a particular place, and fallow lands are more liable to be washed out; that is why I have made that suggestion.

32651. You are not thinking of the possibility of getting both *kharif* and *rabi* crops if you *bund* the land?—The moisture will be preserved. For wheat I plough the land in the rainy season, and so the question of moisture and *bunding* does not come in in our Province where crops are not possible owing to scanty rainfall. I have mentioned it for the sake of preventing the erosion of land.

32652. On page 484, you make a suggestion that I cannot see the object of. You say that Government should encourage shopkeepers to sell combinations of feeds. In your district you have got any quantity of cotton seed, you have got both your *chuni* and *sarki*. What is the necessity of subsidising shopkeepers to supply mixtures of these things?—What I meant was that these things should first be analysed Cotton seed may contain more than what is necessary for the nutrition of cattle. Therefore, I say that cotton seed *urid*, *mung*, etc., should be analysed, the mixtures necessary for milch cattle, for draught cattle, and for calves should be differentiated, and such feeds should be made available to the public, at least to such persons who would like to go in for them It is not possible that a Marwari can know the sort of feed which is necessary for my purposes, and therefore shops should be started where they would be available. They may not actually be subsidised, but they should be encouraged, so that agriculturists can go there and purchase according to their requirements.

32653. It seems to me a very round about way of getting a balanced ration for the cattle. You are an intelligent person, you have taken a degree, and you should have no difficulty whatever in understanding an analysis?—I do not understand analysis at all. I do not know what proportion of *mung* and *urid* should be given to my cow.

32654. If you spent half a day in studying the subject, you would understand it perfectly?—I do not know where I could study it. I read in the *Times of India* only the other day in a review of the report of the Pusa Institute that grasses were analysed in Pusa as regards their nutritive value but I do not know whether *kadbi* and *mung* and other cattle foodstuffs grown in our Province were so analysed.

32655 Oil-seeds have been analysed hundreds of times, cotton seed, *mung* and *urid* have also been analysed?—But I want to know what proportion of them is suitable for milch cattle, what proportion for bullocks, and what proportion for calves.

32656. It strikes me that if a man of your intelligence went to the Agricultural Department and said that you wanted to know those things, you would be referred to some book which in a short time would enable you to make up your rations for cattle better than a Marwari could?—I have never suggested that the Marwari will not be able to give me the feed, but the proportions of feeds available in the various Provinces have to be given by experts in the sciences of chemistry and animal nutrition, with practical experience.

32657. *Sir Ganga Ram*. You want to know the nutritional values?—Yes, of all the foodstuffs before they are mixed and the proportions in which they are to be mixed. I have suggested that such shops, if they are at all feasible, should be encouraged. If officers know it, of course, I may be able to get from the officers of the department the information that I want in this respect, but all persons will not be able to approach officers to get that sort of knowledge.

32658. If you get the information and use the right mixtures, your neighbours will begin to copy you?—We are not so particular about such things here. All people will be able to get such feeds if there are shops where the right mixtures are made available. All cannot come to me for advice, and follow it.

32659. *Sir Henry Lawrence*: Would you not give them advice?—It is not possible to advise all, because I will be the only man in the whole taluk having the knowledge.

32660 *Sir Thomas Middleton*: You referred to the fact that cotton bolls have been selected for the last twenty to twenty-five years?—I did not do the selection but the men from whom I purchased seed did it.

32661. Is not that quite a common practice among the cultivators?—In Berar, I have found only these two instances who have done a lot of improvement. Of course, there may be other people doing it outside the taluk, but these two persons have improved the percentage appreciably by selecting.

It is an old practice among cultivators of some parts of India.

32662. *Sir Ganga Ram*: Are the agriculturists in this Province well served with regard to postal facilities?—Pretty well I should say; in the villages they get a *dâk* once a week.

32663. Are the post office savings banks readily available?—The banks are available, but no agriculturist puts his money in those banks.

32664. Do they hoard money in the form of gold?—They sometimes have some spare cash and the labourers invest in silver ornaments.

32665. In jewellery?—It cannot be called jewellery; it is silver.

32666. What is your opinion as to the question before the Legislative Assembly with regard to the 1*s.* 4*d.* or 1*s.* 6*d* rupee, looking at it from the point of view of the interests of the agriculturists?—That is a very difficult question, I have not been able to digest all the matter which appears in the newspapers on that question, but from the way in which the matte is treated I should say 1*s.* 4*d.* would be the best, because there are so many people in favour of 1*s.* 4*d.*

32667. *Mr. Calvert*: In Berar, do Brahmins plough with their own hands?—Some may be doing so I do not know of any particular instance.

32668. Generally do they regard it as being beneath their caste status to plough?—It should not be. Ploughing is a difficult operation but harrowing can be done by anybody, there is no caste difficulty, but usually the Brahmins cannot in fact plough.

32669 *Prof. Gangulee*: Are you interested in social service work?—Yes.

32670. On page 485 you say: "Institutions like the Social Service League of Bombay should be established through Government." What do you mean?—They should be encouraged by Government, that is all I mean, it should be a private concern, but the main incentive should come from Government officers, because it is quite a new thing

32671. The incentive for social service must come from Government, is that it?—Of course, it may be done in some big places without Government aid, but in the villages it cannot be done without Government aid.

32672 What exactly is the idea? I do not understand?—There are many villages where the people are not educated at all, in such villages they have village societies such as co-operative societies; all these societies are of course incorporated by the help of the Government officers, so I suggest that those persons who incorporate that sort of society should be made to look to this work as well

32673. One social service work is the abolition of untouchability, do you want the Government to do that?—No, that cannot be done by Government.

(The witness withdrew)

Rai Sahib DADU DWARKANATH SINGH, Talukdar, Seoni.

Replies to the Questionnaire.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(*a*) In my opinion, causes which have influenced the cultivator in improving his practice are constant demonstrations by the staff of the Agricultural Department of improved implements, pure seed, holding of agricultural exhibitions, and propaganda by the department, but more than these, the example of their neighbours; once a new implement or seed is introduced in the village by an influential man and its advantages become manifest in better outturn, others take to it.

(*b*) and (*c*) At present demonstrations are carried out by the Agricultural Department at the district headquarters or at two or three places in the district. The paucity of demonstration plots is a serious drawback in the spread of the methods and seeds recommended by the Agricultural Department. That is the reason why the propaganda work which has to be carried out without practical method has not attained as much success as it would have been possible under other circumstances. In my opinion, the best form of demonstration should be to assure the agriculturist by suggesting and working the recommended improvement in a small plot in his own field. This will necessitate an ample provision of adequate and properly trained staff organised on lines dictated by experience.

QUESTION 5.—FINANCE.—(*a*) There has been some discussion as to how should long and short-term credit be supplied to cultivators Since 1870 Government has tried several measures to finance the agricultural operations of the country by lending money to the cultivator on the security of land But the measures have not solved the problem as yet. At present the Government advances loans under Act XIX of 1883, the Land Improvement Act, and the Agriculturists Loans Act, XII of 1884 Under the former Act money is advanced for the specific purpose of land improvement and under the latter for the purchase of seeds, bullocks, fodder, etc. The money advanced under these Acts is called *taccavi* loan and in normal times is necessarily small and is only for purposes specified in the Acts. A cultivator, however, requires money from time to time for other purposes and it is natural that, if he can borrow from the State only for those purposes, he should deal with the moneylender who supplies him with money at all times. Co-operative credit societies have therefore been opened among the cultivators to supply the need. But co-operative societies supply loans for short-term and on personal credit. This necessarily means that the present and existing indebtedness will remain as it is. In my view, however, the importance of co-operative credit societies for supplying short term capital cannot be gainsaid. They supply a badly felt want and give the cultivator credit where he has none. Agricultural operations are facilitated and profits made secure. Then the societies practically perform the same function as the agricultural banks and are very useful to agriculturists who have very small pieces of land to mortgage. I therefore advocate a great increase in the co-operative credit societies for supplying short-term capital. Their importance, if properly looked to, should not be lost sight of as elevators of the moral and material tone of the people. As regards long-term loans, it is very difficult for the co-operative credit societies to deal with them From time to time the proposal of starting land banks has been mooted by several people of note. As far back as the year 1884, the Government of India tried to establish a land bank in the Bombay Presidency as an experimental measure, but it could not be given a trial as the Secretary of State thought the scheme to be an unsound and impracticable project. This question has time and again been discussed and it has been suggested that rural indebtedness cannot be solved by the co-operative societies alone, because it is said they are only palliatives and do not help in the removal of existing indebtedness. It is therefore recommended that land mortgage banks should be started in a particular area and loans should be advanced to the more solvent cultivators for repayment of their present debt on the security of lands, at comparatively easier rates and on equitable conditions. Against this, it is urged that land security is likely to become of doubtful value in view of the constant sub-division of land on account of the operation of the Hindu and Mahommedan laws of inheritance. Agricultural banks, though they cannot wipe out indebtedness, will no doubt remove a long-felt want for long-term loans. Some suggest that this to a certain extent can be met by granting *taccavi* loans for long-term and realising the debts in small instalments spreading over a number of years. But *taccavi* loans are

only granted for specified purposes. Revenue officers grant such loans in some cases but their operations are insignificant in comparison with the total demand. Hence I am inclined to think that land mortgage banks are the only means to solve this problem.

(*b*) *Taccavi* loans are given for land improvements, purchase of bullocks and seeds, and similar other agricultural purposes. The cultivators however do not make full use of the system as these loans do not suffice for the purpose for which they are taken and consequently difficulty is found in repaying the instalment. Then these loans are given only for the purposes specified above and as they have to borrow for other purposes also they prefer to have dealings with moneylenders also. Then again some say that there is a rigidity in collection and this is another cause which discouraves people from taking these loans My present experience is that this is not the whole truth and in several cases considerable amounts have been remitted I however propose the following steps which should be adopted to induce the people to make full use of the system :—

(1) Loans should be for longer terms than at present and instalments fixed should be smaller; care should be taken that loans are employed for productive purposes only, in the case of seed, pig proof wire fencing and bullocks, etc, agricultural associations or co-operative societies should be asked to supply the things needed and the money should be placed at their disposal This is being done to a certain extent, but still much remains to be done.

(2) Collection should not be made from other members for the default of a certain member. This has been done at times and generally operates harshly upon the solvent members.

(3) In the case of money for improvements, the carrying out of the improvement should he insisted upon; for this, therefore, I think the amount should be advanced early to enable the tenants to make their improvements before the rains.

QESTION 6.—AGRICULTURAL INDEBTEDNESS—(*a*) (1) (*i*) The most potent cause of borrowing is the extravagance indulged in on occasions of rejoicing and mourning. I have seen persons reduced to poverty after marriages in their family. Expenditure on marriages, on the rites for deceased relations and on annual ceremonies is rather lavish and reckless. These are expenditures which the customs of the country and false notions of social position in the community encourage. The farmer sees most of the villagers and his relatives in debt and he does not see any harm in following their example.

He wants to earn a name amongst his *biradries* and for the time being he does succeed by lavish expenditure.

(2) Another cause of indebtedness is to be found in the increased facilities for borrowing consequent on the enhancement of ryots' credit due to a rise in the value of the land and on the increase in the number of moneylenders. Talking of *malik-makbuza* plots, no restriction is imposed on the ryots as to the mortgage or transfer of this land by sale or gift. One great evil result of this is to give the ryots ready access to the moneylender, and this, coupled with the enhanced credit which a ryot has on account of the readily realisable high money value of agricultural crops consequent upon the extensions of communications and trade developments, light assessment and enforced and continued peace under the British rule, has made credit excessively wide. Easy credit tempts him to borrow on every conceivable occasion. The ordinary peasant is so improvident that he is ready to promise any rate of interest on a loan which will satisfy his immediate wants. In the Central Provinces, I find the *malik-makbuza* plot holders were for similar reasons heavily indebted while the absolute occupancy and occupancy tenants were in proportion much less indebted owing to restrictions imposed by law upon their transfer.

(3) Another cause of borrowing is the litigious habits of the people. However embarassed a man may be, he always seems to find money for a law suit Most of the litigation is of such a trifling nature that it could be easily settled if referred to the village elders, but the horde of touts, agents and half educated petition writers who live on this never allow the matter to be settled amicably.

(4) Drought fluctuations in the season, death of plough bullocks due to some epidemic also lead the peasant to incur debt. In this connection, I may mention that diversity of occupation is the only remedy which can meet with contingencies and at the same time allow the ryots to save something in normal times.

R. S. DADU DWARKANATH SINGH.

(5) In India, agriculture is in the hands of small holders who are unthrifty and without capital; credit is therefore an inevitable condition of such a state of affairs. The farmer needs seed for sowing; bullocks for ploughing and labour for working in the fields. Only a few of them have sufficient money to carry on these operations. They are consequently forced to borrow at times at a high rate of interest. But I have found from experience that the needs of cultivators for capital to carry on their operations are very small and these loans alone can never lead them to poverty. The major portion of their debts has been for unproductive purposes and to indulge in extravagance at the time of marriages or other ceremonial occasions. Even the *taccavi* loans which have ostensibly been taken for productive purpose have never been spent in full over these things.

(6) Increase in the price of all the factors of production and lower productivity are due to bad systems of cultivation

(ii) As a rule, agriculture in India is in the hands of small cultivators who are improvident and without capital, credit is therefore essential for such a farmer

(1) This being so, from time immemorial moneylending has become a business. And everywhere there has sprung up a class of moneylender. He is the principal source of credit of agriculturists. He is not altogether as blood thirsty a creature as he is painted. As Sir Frederick Nicholson says, "He fills an absolute gap and is a rural necessity; on the other hand, he is most undoubtedly an expensive and dangerous necessity The ryot is always in need of money There is a marriage, a law-suit or seed is needed at the time of sowing, or, the farmer needs money to support himself during the time his crops have failed; on these and other occasions his chief resource is the village moneylender. The great drawback of the moneylender is that he charges a high rate of interest He looks more to his pecuniary gains than to the interest of his clients and seldom fails to take advantage of their indigence. Moneylending being a time honoured business every village has got its own *sowcar* (moneylender) at times or a group of villages has its *sowcar* in some central village. Marwaris, *kalars* and *banias* are generally the moneylenders.

(2) The second source of agricultural credit is *taccavi*

Government advances loans to cultivators for purchase of bullocks, seeds, improvement and fodder, etc., and these loans are commonly known as *taccavi* loans. The liberal manner in which Government comes to the rescue of hundreds of thousands of peasants specially in time of famine and scarcity is a matter of common knowledge and thankfulness.

These advances are also given at other times, but in ordinary season the grant of *taccavi* has to be restricted The amount which a State can advance for such purposes at ordinary times is, after all limited. The State has got its own fixed charges to meet every year and it is beyond the power of even the richest Gover ment to relieve all the financial needs of the agriculturist Credit is a necessity of agricultural life and can be supplied by the banks

(3) The third source of agricultural credit is the co-operative credit societies. They are of recent origin and are very limited in number. They come to the help of those who are already somewhat thrifty. They are not open to the people who are sunk in debt and cannot afford to deposit anything in these banks. The number of societies in this district is only 146, as compared with the number of villages which is about 1,600. Thus every 11 villages have got only one society. Ample scope lies for the development of societies in this district and attempts are being made to extend the benefits of co-operation to a larger area of population.

(ii) Most of the reasons lie in the habits and custom of the people Some of them are enumerated below.

(1) Social ceremonies which absorb so much of the cultivator's income not only force the cultivators to borrow money to celebrate them, but prevent them from repaying debts which they may have contracted in a bad season.

(2) An average farmer generally incurs a debt on every possible occasion with the result that when he dies he leaves a large debt to his heirs, which they inherit along with the property. The heirs for some time pay off the interest or a part of the principal, but one drought or deficient harvest compels them to defer payment with the result that the amount becomes so great that they find it very difficult to pay it off and eventually they grow despondent and allow it to reach a figure when they are forced to part with their land and become landless serfs.

(3) *Sowcars* and some malguzars are generally very slack in collecting debts from solvent clients and allow the sums to swell till a figure is reached when they get tight hold on the debtor.

(4) Interest owing to its high rate absorbs much of the savings and repayment therefore becomes difficult.

R. S. DADU DWARKANATH SINGH.

(*b*) That the agriculturists are largely in debt goes without contradiction. Any improvement in the existing state of cultivation would mean a change in the present methods of production, which postulates a certain amount of capital. But agriculturists are largely in debt, hence no question of supplying capital can be thought of which will completely remedy things, unless steps are taken to lighten the present burden of debt

From time to time various measures have been suggested and attempted with varying degrees of success. *Taccavi* loans and organisation of co-operative credit societies on the line of people's banks in Central Europe have been devised and have been in operation for some time past. Co-operative credit societies which came to be regarded as the sovereign remedy cannot frankly solve the problem. They only supply short term and personal credit and they cannot cope with the real evil of existing and long standing indebtedness unless the load of debt is removed from the neck of the cultivators and they are enabled to carry on their operations freely and profitably. Besides co-operative societies help those who are already thrifty to a degree. Those who are heavily in debt are not admitted to membership and consequently have no help at all.

Special measures therefore become necessary for people who are rather heavily in debt. One proposal which has very often found favour with the non-officials is the establishment of Conciliation Boards to deal with rural indebtedness as was done in the Bhandara and Hoshangabad districts of the Central Provinces some twenty years back. Personally, I think such a proposal is not altogether unsound. It is rightly urged that in the Conciliation Board the Marwari will probably scent a scheme to undermine his position and considerable resentment is likely to be evoked from that quarter. Particularly in the Central Provinces where the malguzar is often the money-lender, this scheme will prove successful and it is to the economic advantage of the malguzar to have a prosperous and contented tenantry In my opinion, in selected areas this should be given a trial It is said that big banks do not help the agriculturists, the village *sowcar* deals with them and he charges a high rate of interest. A volume of public opinion therefore favours application of the Usurious Loans Act with a view to stop this high rate of interest being levied. And the question of affording relief to debtors in unconscionable bargains between debtors and moneylenders has been the subject of discussion for several years. Therefore the Government of India brought a bill before the old Imperial Legislative Council (now defunct) in September 1917 and it was passed and became law in 1918. The principle of the Act is to give the court authority to go behind a contract, to re-open the transaction, and to reduce the interest to an equitable amount, I think strict enforcement of such a law will surely have an ameliorative effect upon the condition of the debtor. The lender is in a position to take unfair advantage of the borrower; it is therefore necessary to protect the latter. The trade of moneylending is not likely to be much affected as the needs of the ryots are many and the lender will get many victims. I do not think any useful purpose will be served by facilitating redemption of mortgages.

(*c*) There is no doubt that a considerable amount of borrowing is due to the extension of credit consequent upon the rise in value of land. Under such circumstances, the unrestricted right of cultivators to transfer their holdings is an accentuating cause of indebtedness. In my opinion, for the Central Provinces *malik-makbuza* plots, some restriction is needed for the transfer of the land on the lines of the Punjab Land Alienation Act or the Bundelkhand Land Alienation Act. These, to a certain extent, will check the speed with which the landed class is being ruined and stop the land passing in the hands of moneylenders. But merely to curtail the peasants' capacity to borrow is not enough and may perhaps do more harm than good. Under the Punjab Land Alienation Act, land cannot be alienated by the landed class to non-agriculturists, with the result that a moneylending class has grown up amongst the agriculturists themselves and it is reported that they lend money at high rates of interest as they have no competition from outsiders. But I think the rate of interest can be much reduced by the introduction of co-operative societies and by the strict enforcement of the Usurious Loans Act. Even suppose the land will pass into the hands of agriculturist moneylenders, I think people who lose by this are mostly those cultivators who are not living in comfort from the income of their land. They will go elsewhere to find occupation in industries, etc But I think advantages to a certain and limited extent are likely to accrue from these measures.

So far as I am aware no terminable mortgages are not common in this tract and I do not therefore think any legislation is called for to prohibit them. But wherever they are in practice, prohibition will doubtless do good to the cultivator.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) The excessive sub-division and fragmentation of holdings that is going on in the country has rightly attracted the

notice of public men and Government alike. From time to time men of note have suggested several measures to remedy this state of affairs, but unfortunately no tangible results have been attained so far. There are no two opinions that this sub-division is detrimental to the agricultural interests of the country. The question is how to reduce the inefficiency in agricultural operations attendant upon such a state of affairs. In my opinion, the real remedy lies only in using up-to-date and scientific methods on consolidated and enlarged holdings. But as it is, even productivity on small holdings can be increased to a considerable extent by education and co-operation of the small cultivators in intensive culture. Small and scattered plots are not peculiar to India alone. It is reported that such a state of affairs prevailed in France, Belgium, Denmark and Japan, but in these countries the outturn of crops has much increased. In the latter country it is said that the average holding is a little over 2 acres but there the peasants are reported to work in their fields from sunrise to sunset, giving practically each plant a liquid dose of manure and having consequently more outturn per acre than the Indian peasant. Then the Japanese peasant, over and above this, combines sericulture with farming, which is a great side industry and gives him a good supplementary income. The Belgian farmer though he has also a small holding is more fortunate as he puts the land under very intensive cultivation and grows only those crops which will amply repay his labour and capital. Science and co-operation have shown to the small holder there how to extract more produce from his holding by employing proper amount of capital in it In India, therefore, following the examples of other countries, it is desirable that intensive culture should replace the extensive culture now in practice. This can be done by individuals, but I think the co-operative movement can do it more easily. Farmers will therefore have to be organised in co-operative societies for production and disposal of their products. This will take a considerable time but it will lead to great improvement in the existing state of things I think enquiries will also be necessary from time to time to find out what crops can be grown with the utmost profit, consistent with the religious sentiments of the people. Thus if the system of cultivation is changed, the cost of production is decreased and the use of improved implements and pure seed is resorted to and the income is increased by having better outturns, lastly, by eliminating the profits of the intermediaries by means of co-operation, the net profits from these holdings are likely to be considerably increased.

(*b*) I have already noted above that the real remedy for the present agricultural ills which will bring about regeneration in the national economy of the country lies in the use of the up-to-date methods of agriculture on consolidated and large holdings. The method of increasing productivity by the intensive culture of small holdings is likely to be slow, and even then the result obtained from it will be only limited in extent. Consolidation of holdings is, therefore a problem of the utmost magnitude The chief obstacles to such consolidation of holdings after it has been sub-divided into many parts are—

(1) According to the Hindu law of inheritance, every male member of the family is entitled to a share in the family property from the time of his birth and can demand partition at any time and there is the universal custom that the sons inherit equal shares. The result is that people have got a strong attachment to their ancestral holdings and are not willing to part with it.

(2) Increase in population also makes it difficult to allow the holdings to become compact. The villagers generally depend upon agriculture for their subsistence. They do not therefore part with their land. They want to keep the land for themselves whether it brings them profit or not.

(3) The laws of land tenure allow the lands to be sub-divided and sold in satisfaction of debt.

(4) Fatalistic acceptance by the cultivator of his present limited means of subsistence and low standard of living.

Having considered the above obstacles, I now pass on to discuss ways of overcoming them Disintegrating forces set in motion cannot easily be checked unless the people are assured of immense profits from the arrangement leading to consolidation of holdings In Bombay, Mr. Keatinge proposed a Bill to be enacted permitting the holding to be consolidated and preventing its further sub-division, but unfortunately the Bill did not become a law. In the United Provinces, also Professor Jevons proposed a scheme to effect a solution but it did not achieve any practical result. Recently, in the Punjab, a successful attempt has been made to solve this problem through the agency of co-operative societies. In every village, a society is organised under the influential and disinterested guidance of a Government officer specially detailed for this purpose; certain bye-laws are made for such a society. Each landowner is persuaded to agree to the desirability of consolidation and to agree to the repartition of land proposed by two-thirds of the members and to refer the disputed matter to a panchayat

R. S. DADU DWARKANATH SINGH.

In the Central Provinces, certain tenancy rights are likely to increase the difficulties. Then the villagers, especially in this district, want different kinds of lands as insurance against crop failure to keep themselves busy all the year round. So the scheme is not likely to be successful.

(*c*) The principle guiding the members should be to avoid compulsion as much as possible, but once the majority has agreed it would seem expedient that legal powers should be taken to compel the minorities to agree and to deal with minors' widows, etc. Without this power, the scheme will lead to litigation. Further a law should be made which will legally empower the arbitrators to make an award under Government supervision final, and thus keep disputes out of court.

QUESTION 11—CROPS—(*a*) (iii) The present method of distribution of seeds is not satisfactory. An average cultivator is generally in debt and as soon as the crops are ready he sells a part of them to pay a part of the debt, the rest he uses for home consumption and other incidental expenses. The result is that he has nothing left at the time of sowing and he is forced to borrow seed from the malguzar or some grain lender at *sawai* (1¼ times) or *dedhi* (1½ times) according to his status and dealings with the lenders. These lenders generally lend inferior seed to the cultivator and as he has none he has to content himself with whatever he gets. Co-operative Seed Unions should, therefore, be opened in large numbers to supply pure and good seed to the cultivator at a reasonable rate of interest.

(iv) It is a common knowledge that, among the wild animals, pig is a great nuisance to the agriculturists. The extent of the damage done by them to the crops is considerable. Various measures have been tried without any appreciable result In my opinion, the real remedy lies not only in destroying them, but also in preventing them from entering the fields. The Agricultural Department has been trying to popularise pig-proof wire fencing, but owing to its cost it has not made sufficient progress. But I think in the long run it is quite cheap and should be popularised. For destruction, shooting clubs have not proved very successful for want of active interest by the members. Lincenses for crop protection have been issued on a very liberal scale, yet the number of pigs killed has remained insignificant. Therefore the real remedy for destruction lies with cultivators themselves. Unless the indifference so far evinced by the cultivator is displaced by active propaganda to lessen the nocturnal visitations of these mischievous and troublesome pests, no progress is possible.

QUESTION 17—AGRICULTURAL INDUSTRIES.—(*a*) The average holding in Berar as ascertained by me, varied from 15 to 35 acres according to the pressure of population and quality of land In the Central Provinces also it is somewhere between 15 and 30 acres. The number of days which an average cultivator holding, say, 20 acres spends on his *rabi* (wheat, etc.) crops is some where near 240 days as shown below,—

Month.			*Work.*
June	...	28	... (1) Ploughing of the field, 15 days. (2) Fencing of *beras* with horns, 10 days. (3) Taking grain to the market, 3 days.
July	...	20	.... (1) Ploughing, 15 days. (2) Sowing of *kharif* crops (*juar*, etc.), 5 days.
August and September	..	30	... (1) Occasional ploughing, when there is no rain, 10 days. (2) Weeding, etc., 10 days. (3) Collection of grass 10, days.
October	...	25	... (1) Preparation of the field for *rabi* sowing, 15 days. (2) Harvesting of *kharif* crops' 5 days. (3) Collectoin of grass, 5 days.
November	...	25	.. (1) Sowing of *rabi* crop, 15 days. (2) Threshing of *kharif* crops 5 days. (3) Collection of grass, 5 days.
December, January and February		40	... (1) Collection of grass, 15 days. (2) Bringing of fuel, 15 days. (3) Miscellaneous, 10 days
March, April and May		72	... (1) Harvesting, 15 days. (2) Threshing, winnowing and carrying of crops, 42 days. (3) Miscellaneous, 15 days.
Total	...	240	

R. S. DADU DWARKANATH SINGH.

During other days the cultivators spend their time in comparative idleness If there are marriage or other ceremonies at the house of their relatives they will attend them. During the winter they also spend a part of their time in repairing their houses. For the rest of their time they either smoke away the day or frequent markets or go on pilgrimages. They cannot leave their homes to go elsewhere to find occupation as these days are spread at intervals over the whole year. It is therefore, necessary that there should be subsidiary industries at home, to occupy their spare time.

(*b*) Subsidiary industries such as cattle-breeding, dairy farming, sale and planting of fuel wood, conservancy and sale of manure, should be encouraged by organising people to work on co-operative lines. For the families embroidery and hand works can be encouraged by providing a market for them at a good price.

Poultry rearing.—The greatest factor militating against its spread is the religious sentiment of Hindus who will not do this even if they starve. Mahommedans and Christians are likely to take to it provided they are assured of a good market for their products.

Fruit growing — It is really a paying concern, but it requires certain amount of capital to be invested in sinking wells and making other improvements for rearing fruits. Even if the necessary amount of capital and skill were forthcoming, the difficulty of marketing the produce is great. Vegetable produce and fruits do not fetch a good price in the villages and as the means of communications are not sufficiently good, the question of taking the produce to towns becomes a costly proposition and the returns obtained are not commensurate with the extra expenditure and trouble involved. The third reason is that certain people do not like to grow vegetables and fruits as they think it beneath their dignity to do so and the work is therefore generally done by the *Kachi* castes.

Lac culture.—For some time past there was a belief that it was inhuman to propagate and collect lac and naturally the higher class people did not take to it and left the trade in the hands of castes called *Patwa* and *Pichra*. But with education this belief has died out and people, even the *banias*, in many places are eager to do this and if it is collected in sufficient amount, shellac can be prepared locally.

Rope making and basket making—These two industries are not likely to be received with favour by the people. A higher caste Hindu has an idea of false pride in not taking up things which people of low caste have been following. Thus, the caste system and the custom of centuries make him consider all sorts of manual labour and industries other than his own beneath his dignity.

(*d*) The chief factors necessary for the success of the kind of industries catalogued in this class are—

(1) Necessary capital.

(2) Trained men to act as managers or supervisors.

(3) Satisfactory marketing of the produce will necessitate greater and cheaper facilities for transport than exist at present. The products produced must be cheaper than similar articles imported from foreign countries.

(4) Labour.

(5) Expert guidance.

I think most of the industries can be easily established if proper guidance is given; labour is quite sufficient in the villages and can be usefully employed on these works. There are several people who will be willing to invest capital also if they are assured of sufficient profit. The question is whether the State should aid such industries and whether any beneficial and permanent results would be obtained by such aid. I think State aid will be of no use unless the people themselves work hard and bring the above factors together in proper proportion. I am not very hopeful of any tangible results from State aid; if it is to be given it should take the following form, and should not be such as to stimulate industries artificially—

(1) Improved implements should be made available at a reasonable price by reducing railway freight on them.

(2) Loans can be given to *bona fide* societies formed for carrying on such industries on an equitable rate of interest.

(3) Products may be protected for some time.

(4) Guidance and advice should be given by the staff of the Industries Department suggesting the ways leading to the success of the industries.

(*e*) Industrial concerns should not be allowed to move to rural areas as they will change the rural economy and make agricultural living very costly.

(*f*) It is necessary to have an intensive study of every village industry with a view to find out possible means of improvement in its working and cost,

R. S. DADU DWARKANATH SINGH.

(*g*) Villagers may be made to realise that insanitary conditions bring in their train disease which they at present attribute to God. For this, societies should spring up in every village and the members thereof should try to persuade the villagers to keep their surroundings neat and clean.

QUESTION 20—MARKETING.—(*a*) and (*b*) I am dealing here mainly with the wheat produce in the Central Provinces where market facilities are very defective. I have not much comment to make on the Berar cotton markets as, there, the buyers and sellers are brought together and the latter are able to sell their produce to whom they like at a competitive price. But in practice the cultivator suffers much owing to certain malpractices, *e.g.*, taking of cotton in the shape of samples from the seller and manipulation of the balances in favour of purchasers by the weighmen. These and other similar abuses do not permit the cultivator to secure full value for his produce. In Akola, under the guidance of certain influential people, an *adat* shop has been opened. It works on the principle of co-operation and helps the members thereof to sell their produce through the society. There is room for considerable improvement in this direction at other centres also. New cotton market rules are also expected to give greater relief to the cultivator.

Coming back to the Central Provinces for *rabi* crops, the system of marketing is as below. Every farmer or tiller of the soil, even in small holdings, has a surplus of some kind that is to be turned into cash. He cannot supply all his requirements from the produce of his land. He has, at times, to dispose of separate articles and has to find many buyers. He is therefore a loser. Much improvement can be affected by the introduction of co-operative societies for collecting small surpluses into one and selling them at a good rate Now, coming to the bigger farmer, if he is in debt a part of the produce is generally taken possession of, by the money-lender who generally pays a lower price Suppose that a man is not in debt, then in that case a grain dealer (merchant) or his servant comes and settles, with the individual farmer, a rate which is generally below the rate prevailing in the grain market town, which is generally at some railway place. But he seller's cart is generally hired and he is paid a rupee or so as hire and thus to some extent he makes up the loss in rate and gets an opportunity to make purchases for which he would have, in any case, been required to go to the market These dealers pay a part of the price and pay the balance after disposing of the produce. On reaching the market place, the produce is taken to the *adat* shop, where the *adtiya* purchases the produce for himself or for some Bombay firm and charges commission from the seller of the produce and also from the Bombay firm. The *adtiya* pays for the produce purchased by him in the evening of the day on which the transaction has been affected. A part of the produce is also brought by the cultivator himself to the market in his cart and he has also to pay commission and other illegal charges, *e.g.*, *dharmada*, *goshala* funds, cleaning of the yard and watering charges etc. Considerable trouble is thus experienced by the seller on account of these levies and consequently he is unable to secure the full price for his produce My idea is that in this way the intermediaries take about 5 to 10 per cent of the produce. *Adat* shops worked on co-operative lines are therefore recommended and the levies made in the market should be made illegal. A grain market committee consisting of buyers and sellers should be instituted at each market place to look into the question of weighing and stopping the levy of illegal dues.

(*c*) Steps should be taken to classify the goods brought into the market according to their quality and purity. Talking of cotton, there should be rates distinguishing between short and long staple varieties. The present system is defective. It gives rates according to market prices and this leads to great adulteration. Similarly for wheat and other produce, distinguishing rates are necessary.

(*d*) It would be to the distinct advantage of the cultivator if he had correct information about the market conditions and rates. These rates and other news can be published in the market places.

QUESTION 22—CO-OPERATION – (*a*) (i) As an alternative to the opening of land banks ided by the State, the Government has initiated and encouraged a system of co-operative credit among cultivators on the lines of the People's Banks in Central Europe, by opening societies for the purpose in various villages and by arranging for the inspection and audit of their accounts by an official staff. So far the State has not taken any financial responsibilities in the matter. After the initial stage, as the movement progressed, Government began to relax its control, leaving more and more responsible work in the hands of non-officials. The result was that the societies went on multiplying without sufficient and efficient provision for supervision and inspection and uninspired by the true co-operative spirit. The movement was therefore for

some time threatened with disaster and the Government has now been exercising more control. This accounts for the fact that the movement has not, even up to now, touched the fringe of the problem of rural credit and indebtedness. There is no doubt that it is more useful to have slow and steady progress rather than allow unco-operative and weak societies to come into existence. But I am inclined to think that the speed at which the movement is going is rather slow and cautious and there is much more scope for extending the operation of the movement. I think, for rapid progress, Government officers of influence in sufficient numbers are necessary to enable them to know the local conditions thoroughly. Such an organised class of workers should precede rather than follow the society. An enthusiastic co-operator of note has truly said "To attempt to pass on to honorary organisers the development of rural credit is nonsense and fraught with danger". Even at this stage, the supervision of the Central Bank staff has not proved satisfactory, while the Government agency has always proved success owing to the prestige which an officer has, superior education, efficiency, independence and disinterestedness. Steps, therefore, needed at this stage are—

(1) A staff of a quality and strength which would ensure rapid progress.
(2) Increase in the power of the Government Auditor, as regards the fixing of the credit limit of the societies.
(3) Stopping the Central Bank from supervising the work of societies.
(4) Increasing the usefulness of the institutes recently opened for propaganda work, by deputing more officers for this work.

(*a*) (ii) Up to now, with notable exceptions, non-officials have not taken as keen and active a part as the movement deserves. In some cases only passive acquiescence was seen; what is required is active work. Unfortunately, in many cases, busy bodies have come forward to work as office-bearers only to boss over the show. In the circumstances, non-official agency can help thus—

(1) By enlisting themselves as volunteers for infusing among members the desire to help and improve themselves by combined effort.

(2) To carry out the work of spreading the organisation initiated by the Government.

(3) Discouraging unproductive expenditure.

(4) To check the tendency to run the banks or societies as profit-seeking concerns.

(*b*) (i) The chief form of co-operation in the Central Provinces is the co-operative credit society. Its aim is to supply credit at a cheap rate and also to teach the cultivators the value of thrift and self-help. In the Central Provinces, the chief source of capital of primary societies is loans from the Central Bank. Therefore the total borrowing power of a society is fixed by the Central Bank. This has not worked well, as in most cases it has not been properly fixed. I think the Government Auditor is the best person, and check limit and credit limit should not be very different from each other. Loans should be used for productive purposes, this has not been done in the past owing to want of proper supervision from the Bank staff

(ii) This is rather an advanced form of co-operation and has not taken firm root in this Province. But if started and properly worked it has a great future as much of the profit of the middleman will be saved and the consumer will be a gainer from it.

(iii) Such societies have not yet sprung up. There is one such society at Akola for the sale of cotton. The necessity for the formation of societies for sale has been discussed by me under Question 20—Marketing—(*a*) and (*b*).

(v) There are no such societies and they are badly needed in this Province. I have discussed about them under Question 7—Fragmentation of Holdings (*b*).

(vi) One such society, though not co-operative, exists at Murtizapur. The advantages to be derived from such societies are many as the cultivator can, without much investment, have the use of the best machinery and increase the produce of his land.

(viii) It is common knowledge that the breeding of cattle in the villages is on very unscientific lines and in consequence agricultural live stock has degenerated. Societies should, therefore, be formed on the following lines:—

(1) Cultivators may be induced to have good cows.

(2) Persons having such cows may be formed into societies and their cows should be covered by the society bull.

R. S. DADU DWARKANATH SINGH.

(3) These cows and their progeny should be kept separate and not allowed to mix with the village herd.

(ix) Under this head I propose that societies should be formed for better living. Their aim should be to increase the standard of living of the members by general education, improved sanitation and housing, etc. This will lead to thrift and other useful results. Societies should be given power to fine their members in case of default.

(*c*) I think legislation will be expedient to compel the minority (say one-tenth) to join in any scheme named in this class for the common benefit.

(*d*) Many of the societies I have personal knowledge of are credit societies and they have not in the main attained the object in view, *viz.*, the principle of self-help and thrift.

QUESTION 24—ATTRACTING CAPITAL.—(*a*) In India, the educated class generally goes to urban areas in search of a profession and has a distaste for agriculture. The reason for this exodus lies in the fact of agriculture being looked upon as undignified. Unless agriculture is exalted there is no room for the best brains to take it up. Besides the drift of literate people to the towns, other people having money take very slowly to agriculture, because the returns obtained from agriculture with the existing methods are generally much lower than are obtained from trade and moneylending. This class of people even if they purchase land rarely work as farmers, which intensifies the evil it is sought to remedy. The present tendency to sub-division of holdings also discourages men of capital and enterprise from taking to agriculture, as men of enterprise and capital will naturally like to work their farms scientifically with improved implements and pure seed if they are to reap the full benefits from the soil. In the circumstances the following steps are essential :—

(1) There should be more education in the elements of agriculture among the agriculturist classes. The education given should be of such a type as not to create a distaste for agriculture in the mind of a boy. The boys should be made to feel that, as a profession, agriculture has unlimited scope for improvement and is likely to yield great returns to human efforts if scientifically and properly applied.

(2) Attempts should be made to stimulate thinking on rural problems by the study of different phases of village life, and for this facilities should be provided.

(3) The tendency to sub-division of holdings should be stopped. Steps to enlarge and aggregate holdings which permit the employment of scientific and-up-to date methods of agriculture will go a long way to attract men of enterprise to the land.

(*b*) I believe the landowner is anxious to improve his position and to adopt any means within his reach whereby his position can be improved But ambition is soon crushed out of him because of the local and social conditions over which he has no control. Then there are family obligations, these make it impossible for him to improve his land. Thus my impression is that land improvements do not take place mainly for want of capital. Those who have got capital want to engage in moneylending which on the average brings about 9 per cent return to their capital, while the improvement of land appears to give him uncertain and fluctuating returns. There are some who content themselves by subletting their holdings and live upon their rents. Another belief which is current among a certain class of people is that improvements are taxed by the Government in the shape of enhanced assessment at the time of settlement. This argument has no force as improvements are already exempted from assessment and only illustrates the tendency of the people to blame the Government for anything and everything

QUESTION 25—WELFARE OF RURAL POPULATION.—(*a*) In my opinion, much depends upon the health of the cultivators and this problem has not been properly attended to. Cholera and malarial fever and other diseases prevail at certain periods of the year and cause considerable loss to the people. They also lessen the efficiency of the worker. These are doubtless fostered, if not caused, by want of cleanliness on the part of the people. Much has been done to combat these but a vast field lies untilled in this direction. With the people, who, in spite of their daily numerous ablutions, are ignorant of the laws of hygiene, success means more time and patient work among them. I think an increase in the number of sanitation panchayats, village panchayats, travelling dispensaries and the spread of general education will remove some of the evils resulting from the present state of things.

(*b*) With the advent of the Reforms and other world wide causes, a new wave of industrialisation has entered India. The institution of machinery, which in the time to come may lead to the industrial regeneration of India, is making headway.

R. S. DADU DWARKANATH SINGH.

Some people think that industries will alone make the country prosperous, but in my opinion this will not be so and the land should be restored to its proper position as the chief source of new wealth in the country and almost the only source of producing raw material for the industries. When over 70 per cent of the people in India gain their livelihood directly from the soil, the prosperity of this country seems destined to rely more upon agriculture than upon industries. Hence the improvement of the agriculturist's livelihood constitutes the readiest way of improving the material progress of the country. The question of regenerating the economic life of a cultivator is therefore a problem of the first magnitude Under these circumstances, a close study of some of the phases of rural economic life is essential. It is impossible to acquire a keen and permanent interest in the problem unless one is cognisant of its nature and significance. This accounts for the fact that the social and economic interests of the Indian farmers have not as a rule received proper consideration at the hands of Indian politicians. As, to know the disease accurately is half the cure, so, it is very necessary to find out what ails the cultivator, hence the necessity of an agency for carrying out the proposed survey.

Having considered the necessity of an enquiry it is necessary to find out what agency and method are requisite to carry out the object in view. In my opinion, Government agency is the only reliable and proper agency to carry out this work. If definite lines of enquiry are laid down, the existing district staff with a little extra trouble will be able to conduct the survey. The pitfalls in the way of the enquirer are many and figures collected become of doubtful value unless they are constantly checked by observation The Government officers besides knowing the area under enquiry have the advantage of supplementing facts by constant observation and comparing the same with facts collected in a similar way under similar conditions.

SCOPE OF PROPOSED ENQUIRY.—In selected villages the enquiry should be of a searching character with a view to elicit correct information as to the size of holding of each ryot, the extent to which he is indebted, the amount spent by him on food and clothing, on social ceremonies which absorb so much of the income of the cultivator, etc Estimates of the cost of production with the amount of produce received and the possibilities of decreasing the cost of production and increasing the outturns from his fields also should be studied

METHOD.—In my opinion, one tahsil should be the unit of enquiry. A single village can hardly typify the conditions of a Province. It is, therefore, necessary that the study should be spread over a number of villages in different tracts. The results obtained by such study are likely to be of broader application. This will also enable us to investigate the conditions under which agriculture suffers from deteriorating influences It will then be possible to locate the cause and finally to devise means to remedy it. This enquiry should spread over a long time.

Oral Evidence.

32674. *The Chairman*: Rai Sahib Dwarkanath Singh, you are a talukdar in the district of Seoni in the Central Provinces?—Yes.

32675. We have your note of evidence, would you like to make any statement in amplification of that note?—I have already written what I have to say.

32676. And, if I may say so, you have made your views very plain. What is your own connection with agriculture?—I am an agriculturist; I have got 96 villages in Seoni district.

32677. How many acres?—Each village is 1,000 to 2,000 acres.

32678. You do not know the exact area?—No.

32679. Is that held by you on the malguzar right?—Yes.

32680. Have you got any cultivation in your own hands?—Yes, over 50 villages.

32681. You are cultivating them yourself?—Yes.

32682. By hired labour?—Yes, I have engaged servants.

32683. Do you pay the wages of your labourers in cash or in kind?—Sometimes they are paid in kind and sometimes in money too.

32684. Have you any irrigated land?—Yes, some; generally there is a little tank of my own in the home-farm; from the tank we generally irrigate the *kharif* paddy crop.

R. S. DADU DWARKANATH SINGH,

32685. Have you any wells?—Sinking wells is not popular in my district.

32686 The irrigation is entirely tank irrigation?—Yes; when we have fruit gardens we irrigate with a well.

32687. What is your principal crop?—Wheat and rice.

32688. In regard to horticulture, are you growing oranges?—No, mangoes and guavas.

32689. Do you grow any vegetables?—I grow them for home consumption.

32690. Have you anything to tell the Commission as to the feeding of your working bullocks? Do you follow the usual practice?—Yes, we have got some forest and we collect grass; and there is local fodder, namely, wheat *bhusa*.

32691. Do you grow any fodder?—We have big fields of fodder and we cut it annually; it is collected for our own bullocks.

32692. What sort of fodder?—Just grass.

32693. Have you tried any of these new grasses that have been imported?—No.

32694. Do you make any silage?—No.

32695. What manure do you use?—Cowdung.

32696. For the wheat land?—No, we do not give manure to the wheat land there is not enough for use in the paddy land.

32697. Do you use artificial fertilisers in your wheat land?—I have not tried them.

32698. For how many years in succession do you grow wheat on the same piece of land?—We grow wheat and gram alternately, generally.

32699. Do you think there is much manurial substance in the water that comes out of the tanks? It has been suggested by one witness that his land maintained its fertility owing to the fact that the water with which he irrigated his land swept through the village areas and picked up a considerable amount of plant food in so doing?—How can that be so? The silt deposits in the tank. The fields near the *basti* are more fertile than any others, but I do not know that the tank water will help in that way.

32700. I suppose you have to clean your tanks out from time to time?—Yes, we dig up the silt from the tank beds and spread it in the *bandhies*.

32701. Would you give us an indication of the outturn of your land?—Wheat usually gives 4 to 5 times, and rice 10 to 20 times.

32702. How long have you known the land?—Four or five years.

32703. Have you the history of the cropping of the land for any length of time? Do you know what went on before you went there?—Yes I used to go there with my parents.

32704. It is a family estate, is it?—Yes, for two hundred years we have been settled there.

32705. Has there been any diminution of the fertility of the soil?—It is going down.

32706. You think the fertility of the land is decreasing?—Yes.

32707. What proof have you in support of that statement?—Generally the fields are washed away when there is no particular arrangement for *bunds*, and if the management is a little careless.

32708. That is soil erosion?—Yes.

32709. But what about the fertility of the soil that is in position?—We like to take crops off the land, but generally we do not give manure.

32710. *Prof Gangulee*: Is the yield from the land decreasing?—That depends on the season; this year we did not get any rain and the crops naturally decreased.

R. S. DADU DWARKANATH SINGH.

32711. *The Chairman*: Are you confident in your own mind that this rather modest form of farming is the most paying; do you not think higher farming, as we would call it, that is farming on a system according to which you would put more money into your land in the shape of manure, might pay you?—Yes, if we put a *bund* round it pays; if we invest more money it pays.

32712. Do you not think you might invest some money in artificial fertilisers if you cannot obtain cowdung?—The expense would be too great.

32713. Have you ever worked it out?—I have not worked it out, but I do not think it would pay, because we have to borrow money. I am speaking of the ordinary cultivator.

32714. I am thinking of your own case I am trying to discover how it has come about that you have not experimented in the use of fertilisers for wheat growing?—We have not tried them.

32715. It is not for me to make suggestions as to how you should manage your farm, but do you not think you might venture an experiment over 10 acres. It would not involve much risk?—That we are doing with the help of the Agricultural Department.

32716. Why do you want the help of the Agricultural Department? You have only to buy a bag of artificial manure and put it on the land?—We have tried growing hemp on the land, the Agricultural Department advised us to do that, but that was not satisfactory.

32717. Do you mean green manuring?—Yes.

32718. On page 498, you speak of *taccavi* loans, and I judge from a later statement in your note that on the whole you are satisfied that *taccavi* loans are well administered?—Yes, but it is difficult to collect the loans.

32719. Have you come across a case where an application for *taccavi* loan was made and was refused, when you yourself from knowledge of the case thought the application was a reasonable one?—No reasonable application has been rejected so far, but where cultivators have bad habits, are not really solvent and do not utilise the money properly, and the Tahsildar knows they are not good men, it is refused.

32720. You do not think applications for *taccavi* loans are refused without good grounds?—No.

32721. You suggest the starting of land mortgage banks. Is not it the case that a great many cultivators in this Province have got nothing to mortgage?—Yes, and that is why they do not get any money from outside. Those who have absolute occupancy can mortgage, but ordinary occupancy tenants cannot mortgage.

32722. What proportion of your own villagers are holding on simple occupancy right?—All of them

32723. So that none of your tenants can borrow?—No.

32724 Do you lend money yourself?—No, I do not do moneylending, but when the rent gets into arrears they have to enter into an agreement to pay instalments.

32725. Do you provide any seed?—Yes.

32726 How do you finance that?—On credit.

32727. What return do you get?—One-quarter of the crop.

32728. On page 498, you point out that the moneylender is not altogether as blood thirsty a creature as he is painted. Do you see any hope of eliminating the moneylender from the agricultural system of India for some years to come?—I think there must be someone, either the private moneylender, or the bank, or the *mahajan* or whoever it may be.

32729. You say: "The great drawback of the moneylender is that he charges high rate of interest"?—Yes, that depends on the solvency of the man.

32730. Do you mean that he insures against possible insolvency by charging a higher rate of interest?—The moneylender tries to get as much as he can in the shape of interest.

32731. It depends on the solvency of the borrower?—Yes.

32732. The man with a poor credit has to pay a higher rate of interest?—Yes.

32733. *Prof. Gangulee:* What is the private rate of interest in your neighbourhood?—It is about 24 per cent.

32734. *The Chairman:* On page 499 what exactly would be the function of the Conciliation Board, the setting up of which you suggest?—They can give some facilities.

32735 Would you give the Boards statutory powers?—I think we must, otherwise they cannot work

32736. Would one of their functions be to cancel interest?—Yes.

32737. Do you think there is a danger that operations of that sort may limit the credit of the cultivators?—It will naturally follow, but at the same time their statue will be better, they will be given a good start.

32738. It is a question of degree?—Yes.

32739. You must be careful not to overdo it?—Yes.

32740. You are definitely of opinion, I see, that the putting into operation of the Usurious Loans Act would be advantageous?—Yes.

32741. You point out on page 499 that "a considerable amount of borrowing is due to the extension of credit consequent upon the rise in value of land". That looks as though the amount which the cultivator borrows is the amount which anybody is prepared to lend him?—Yes.

32742. It is rather measured by his credit than by his needs; he borrows as much as he can get?—Yes.

32743. Does that suggest to you that there might be some danger in affording unlimited cheap credit?—Yes, he may misuse it

32744. Then you give us an interesting note of your ideas in the matter of consolidation of fragmented holdings. Have you experience of this in your own villages?—We have not got this scheme there. But I was talking about this in the Provincial Board of Agriculture with regard to Chhattisgarh.

32745 Would you turn to your answer to our Question 20 on page 503 of your note? I see that you think that the amount of cotton taken as a sample amounts to some deprivation to the cultivator 'owing to certain maloractices, *e g*, taking of cotton in the shape of sample'. Do you think that enough cotton is taken for this practice to be a serious disadvantage to the cultivator?—They take as much as they like and so many people take it.

32746. You mean they take large handfuls?—Yes

32747. It is the actual amount taken that you complain of; is that right?—Yes.

32748. Are you familiar with the society at Akola?—No.

32749. Do you sell your cotton through the ordinary market?—I do not deal in cotton; I deal in wheat and rice.

32750 Taking rice, do you go to the ordinary market or sell to the merchant?—I go to the market

32751. Wheat?—I sell to the *banias*.

32752. Straight to the *banias*?—Yes.

32753. On page 503 half way down you say: 'the produce is taken at the *adat* shop, where the *aditya* purchases the produce for himself". Now the *aditya* is really a small broker or commission agent, is he not?—Yes.

32754. Is it not highly improper that one who acts as a commission agent should also buy as a merchant?—There were some rules to prevent this.

32755. What effect had these rules?—There were Cotton Committees last year; I do not know exactly what happened.

32756 When I ask you to sell my cotton on commission I assume that you are going to get me the highest prices in order that you may get the biggest commission; but if you are going in fact to buy as a merchant you are trying to get my cotton as cheap as possible?—Yes.

32757. Then I understand from your answer on page 503 that there is no sufficient grading of cotton and that as a result value is not obtained for quality; is that so? You say, 'Steps should be taken to classify the goods brought in the market according to their quality and purity'?—We cannot do it because any amount of stuff comes in and is mixed up together.

35758. Can you get the full value of your quality if you have got all your goods mixed up?—If it is pure we get a good price.

32759 You are talking about rural welfare at the end of your note, page 506. You say, 'It is impossible to acquire a keen and permanent interest in the problem unless one is cognisant of its nature and significance. This accounts for the fact that social and economic interest of the Indian farmers have not as a rule received proper consideration at the hands of Indian politicians'. All farmers in all countries will tell you that no politicians are of any good to them. But apart from that, what I wanted to ask you was this Do you feel that more might be done to attempt to interest and inform what is called the intelligentsia in the business and life of the countryside?—There is a great scope for that.

32760 Have you ever considered the possibility of instituting a degree of rural economics, which degree might be a qualification for public offices in services other than those connected with the Agricultural Department?—I think there should be some such thing.

32761 Meanwhile the town-bred Indian, however able or active he may be, is as a rule very ignorant of the life of the country side, is he?—Yes Even the people who say they represent the rural interests in the Council do not know anything about the rural conditions, but simply on account of their influence they enter the Council and I do not know what they do in the Council for the improvement of the rural areas.

32762. *Prof. Gangulee*: Are you in touch with the co-operative movement in any way?—Yes; I am a Director of a Co-operative Bank.

32763. Do you know of any primary society working in your neighbourhood?—Yes,

32764. Can you tell us how that particular society that you know of is working?—It is working well, it pays the instalments in time

32765. Has that particular society attained the object that you mention on page 505, namely, the principle of self-help and thrift?—It has not attained it to the full extent, but it is on its way to attainment.

32766. You visit these societies occasionally yourself?—Yes.

32767. On page 500, you make a reference to certain crops that can be grown with the utmost profit consistent with the religious sentiments of the people? What are the crops that you have in mind?—*Sann* hemp and *lakhori*, a kind of pulse.

32768. Do the people still have prejudice against these crops?—No, when it brings in money all the prejudice is gone. *Sann* hemp was supposed to be grown only by the low caste people and now Brahmins are growing it.

32769. Do you think that religious sentiment is certainly not a handicap?—It is disappearing. A certain well-known Rao Bahadur who is a Brahmin actually got a prize for *sann* hemp in the last exhibition, and that shows that the prejudice is disappearing.

32770 With regard to the consolidation of holdings, could you tell us what is the attitude of the malguzars towards this question of consolidation?—Generally you will find that the malguzars have got the best land and the poor cultivators are given lands far away from the best lands. If the malguzar has lands to give out, he will always keep the best portion of it for himself and give the remainder to the cultivator.

32771. But he is not in favour of consolidation, is he?—It all depends on his mood. I am a malguzar and I am in favour of consolidation.

32772. But your brother malguzars are not?—That depends on their education and the objects they have in view.

32773. Have you at any time discussed this question with your brother malguzars?—Not seriously, but casually.

32774. You say that the present method of the distribution of seed is not satisfactory. Why?—When they get a sort of *taccavi* from the Government they go directly and purchase anything they want.

32775. From where do you get your seed?—I have got my own farm and I also get seed from the Government farm.

32776 You are a member of the Board of Agriculture?—Yes.

32777. Have you at any time made a suggestion before the Board as to how to improve the method of distributing seed?—The demonstration farm takes the responsibility of distributing seed to the different people in central areas some 20 miles apart, and the seed is distributed from there.

32778. I want to know if you yourself at any time ever took part in the discussion?—No.

32779. Was there any discussion at any time to improve the seed supply?—I think there was.

32780. Were you present at that discussion?—Yes.

32781. Did you yourself take part in it?—Yes.

32782. With regard to agricultural industries you told us that 240 days is the average number of days during which the farmers work and you talked about subsidiary industries. What are the subsidiary industries that you would like to introduce if you had the power to do so? Have you thought of any spare-time occupation?—No, I have no definite programme for that.

32783. You grow cotton?—No

32784. You farm a very extensive area. Would you appoint an agricultural graduate from the Agricultural College here to manage your farm?—Yes.

32785 Have you at any time tried to get one?—All the graduates that come out are employed by the department itself.

32786. If you got one how much would you pay for him?—I could afford to pay about Rs. 100 a month, just to look after the farm work and nothing else.

32787. Did you approach the agricultural authorities here to supply you with a man when one was available?—I had a talk with Dr. Clouston on the subject and he said that he was short of men himself.

32788. What variety of wheat do you grow?—*Pissi*. In my neighbourhood they grow Pusa 4.

32789 Who introduced it?—The farm gave it to us.

32790. *Mr. Calvert*: Have you read a book by Mr. Darling called 'The Punjab Peasant in Prosperity and Debt'?—No.

32791. There is a great similarity of views between your note and Mr Darling's book. Is land passing into the hands of moneylenders to any great extent in this Province?—It is gradually going away and the *banias* and pleaders are now monopolising it.

32792. Do you think that the process will do any harm to the country?—The real cultivators of the soil will disappear; they will drift to the cities for jobs and if they cannot get jobs they will have to come back and take to farming again.

32793. You are inclined to recommend land mortgage banks. Would they be on the co-operative method or some other method?—I think there ought to be some other method.

32794. Have you thought it out?—No. We want some sort of organisation which would interest the malguzars. There is no provision for big landlords.

32795. You say that the needs of the cultivator for capital to carry on his operations are very small. Could you give us an idea of the amount of cash required for one acre of wheat?—I think generally a cultivator is in possession of 10 or 12 or 13 acres.

32796. How much cash is required for one acre of wheat?—If his bullock dies at the very moment he would require Rs. 30 or Rs. 40 to purchase a new bullock.

32797. You have not worked it out per acre?—No.

32798. *Sir Henry Lawrence:* Have you got any forest area in your villages?—Yes.

32799. Do cattle graze on them?—Yes, the people of the neighbouring villages bring their cattle to graze there and they are charged grazing fees.

32800. At what rates?—At the Government rate. We charge the same rate as the Government charge.

32801. Is that the ordinary custom with the malguzars? Do they charge the Government rates?—They charge more sometimes. People who belong to the village are charged less; those who want to graze their cattle for a short period are charged more.

32802. Is there any surplus of cattle in your villages? Are they more than is necessary for the needs of the cultivators?—There are not enough for the needs of the cultivators.

32803. We were told that in a great part of this Province far too many cattle are kept. Is that not your experience?—The e are not too many cattle. As a matter of fact I am required to purchase bullocks for my own home farming.

32804. Useless cattle are not kept at all?—Sometimes the old cattle are kept on as the people do not like to part with them or destroy them.

32805. Have you tried to improve the class of cattle in your villages?—Yes.

32806 What is the breed of bull you have?—The Gaolo breed, which is a local breed. It is not a good milking breed, it is a good trotting breed.

32807. And for plough work?—I get them from Hoshangabad for plough purposes especially in wheat areas. For the mud Goalo bulls do very well.

32808. Do you not keep any cattle for milk purposes?—Up to now we have kept buffaloes only because we let the calves drink the milk.

32809. Do you know that experiments have been made in some parts of India to show that you can improve the milking capacity of cows?—Yes, by crossing with Montgomery bulls.

32810. You have studied that?—Yes.

32811. But you have not adopted it?—This year we have sent for a bull from the Seoni District Council. They purchased a Montgomery bull and it is being used.

32812. You personally as a landowner have done nothing in that respect?—No; we are just trying the Gaolo and Malvi bull.

32813. Do you think it would be reasonable to raise the grazing fees in Government forests?—I think they are quite high enough. If we increase them we have to diminish the grazing in particular tracts Supposing we have grass land for the grazing of 2,000 cattle and we allow 3,000 cattle that will not be sufficient. If these facilties were provided I do not think there would be any objection to increasing the grazing dues.

32814. In some areas the malguzars charge four times the Government rate?—Yes, that all depends on the needs of the man who wants to have his cattle grazed.

32815. And that rate, namely, four times the Government rate, is paid by the people?—It depends on their necessity. Supposing there are grazing areas near their houses, they will naturally pay more for those because they can supervise their bulls more easily.

32816. And that raises no discontent on the part of the payer towards the malguzar?—I think he agrees to pay and that is why he takes his cattle there for grazing.

32817. And he is perfectly content with the bargain ?—He has got to be contented.

32818. *Sir Ganga Ram:* What is the average area of your villages ? Will it be 1,000 acres to each village, roughly ?—I have not gone into the details of it.

32819. Could you not make a rough guess ?—I cannot tell you exactly.

32820. You said there are 56 villages ?—Yes.

32821. How much land revenue do you pay ?—Rs. 35,000.

32822. Do you know the rate of revenue per acre ?—No, I have just taken over charge of the family business.

32823. Are you manager ?—I am just one of the members of the family.

32824. Is your estate subject to the Hindu law of inheritance ?—Yes.

32825. It is capable of being divided from one generation to another ?—Yes.

32826. How many shareholders are there now ?—We are a joint family.

32827. But you have not been a joint family for three generations ?—We have been a joint family.

32828. You divide the income ?—We have a common mess, and we are a joint family.

32829. All of you ?—Yes.

32830. How many shareholders are there ?—There are 4. Formerly my grandfather was the only man in possession of the estate. After him, out of his 5 sons 4 died and only 1 son survived. We get hold of one man in our family and make him the head.

32831. Supposing any of the present shareholders want to have their portions separated, what will happen ?—He will certainly have his choice.

32832. Supposing this division goes on, in another 50 years each sharer will have only 10 to 15 acres ?—Yes

32833. And after that there will be sub-division into still smaller fragments ?—Yes, that will go on and the deterioration will continue.

32834. Have you ever thought how it could be stopped at certain limits ?—It is not in our hands. If my son demands his share, I cannot stop him from having it.

32835. Is your property situated in one block ?—It is in 30 villages, in patches.

32836. Is it high land ?—Some of it is high land and some low land.

32837. Is there any hill land ?—We have some hill land and some of it is in the plains.

32838. Can you give us a rough idea of the population of your estate ?—No, I have not calculated it.

32839. You said that this year the rains have failed and you are afraid of losing your crops ?—Yes.

32840. You say you have a tank ?—It is not for wheat, it is for paddy.

32841. But this is not the time for paddy ?—No

32842. How is it you are afraid of losing your wheat ?—The land is not irrigated.

32843. Can you not irrigate it from the tank ?—No.

32844. Can you not lift the water for that area ?—The water level is very low.

32845. Does the tank hold any water. It is just enough to irrigate the rice tract.

32846. Rice is finished now ?—Yes, and the water has gone down.

32847. There is water in the tank ?—Yes, but it is not enough to irrigate the wheat tract. Even pumping up the water will not help.

32848. You are a Rajput ?—I am a Kayasth.

32849. You have always been a native of this Province ?—We have been in the Province for 200 years.

32850. *Sir Henry Lawrence:* What Province do you come from ?—From the United Provinces, Rai Bareilly.

R. S. DADU DWARKANATH SINGH.

32851. *Sir Ganga Ram:* You pay Rs. 35,000 as land revenue; what is your profit?—Just half.

32852. For the whole year?—Yes.

32853. You manage it yourself?—I have my agents and sub-agents.

32854. There must be a general manager?—Yes; one of my relations is the manager.

32855. You do not grow cotton?—No.

32856. Why not?—Because it does not grow in my tract

32857. How do you know that it does not grow?—We have tried to grow it, but the soil is not suited for cotton.

32858 Have you any of your own schools there?—We have District Council schools in some villages.

32859. You have not offered any facilities to your tenants in the shape of hostels or anything like that?—No, but sometimes I get hold of my tenants' sons and send them to schools at Hoshangabad.

32860. Did you receive any agricultural education?—No.

32861. Are you a graduate?—No, I am a matriculate.

32862. You are not a member of the Legislative Council?—No

32863. *Sir Thomas Middleton:* On page 501 of your evidence, you have given us a detailed estimate of the time that a cultivator spends in cultivating his *rabi* crop. You make it 240 days?—Yes, approximately.

32864. Have you got these particulars from your books, do the figures represent your own experience?—It is what I see every day.

32865. You just sat down and made an estimate?—Yes. For a 20-acre plot, ploughing will take 15 days, and the rest of the operations must be finished within the time I have indicated

32866. You say that the *kharif* crop grown on this area is rice?—Yes.

32867 Do you have anything else?—There is *juar*, but it is very little, because when the weeding operations are started, transplantation operations go on side by side and generally the people go for transplanation rather than for weeding.

32868. When you were making this estimate, what size of holding had you in your mind? Something like 20 acres or more?—No, because that depends on the working capacity of the man If a man works in a certain area, he will have his programme, and he must finish within a certain time, according to the size of the holding

32869. Supposing a man has less than 15 acres, he will not be fully employed?—He cannot be fully employed.

32870 Are there many in your villages who have less than 15 acres?—Yes After the ploughing, they hire themselves out as labourers.

32871. They themselves go out as labourers?—Yes

32872. What is the usual size of the holding of your villagers?—Sometimes they hold 60 to 80 acres; sometimes they are malguzars and they reside in the villages.

32873. You do not have many men who are holding less than 15 acres, and who are going out as labourers?—There are many holding 10 acres But they cultivate an additional area on the *adhia* system. Some of them have got bullocks of their own, and in fair weather they go out to the forests and use them for bringing teak. In the cultivating season, they cultivate some additional land on the *adhia* or half and half system.

32874. Is wheat the only important *rabi* crop in your district?—Yes.

32875. What is the time of the year when you have most difficulty with fodder?—June and July.

32876. Just before the rain brings fresh grass?—Yes.

32877 I see that you estimate that the average cultivator would spend about 35 days in collecting grass for his bullocks?—Yes.

32878 How many bullocks do you suppose him to have?—Two bullocks.

32879. Does he keep any cows at all?—He may have one cow.

32880. Or a buffalo?—A buffalo is not generally kept. If a buffalo dies there will be greater loss to the man. They prefer to keep a cow.

32881. Would the man who has 60 to 70 acres keep a buffalo?—He will have two buffaloes.

32882 You told us that there are 4 members in your family; when you were preparing this evidence, did you discuss it with the other members of your family, or is it your own?—I consulted them, and I consulted some of my friends. There is division of labour in my family, one looks to the social side, another to agriculture, and so on.

32883. This evidence represents a consultation in your family?—Yes.

32884. On page 503, you think that, as compared with Berar, your people in the north are not so well off for markets?—Yes, because where there is cotton there is a market, but for wheat we have to deal direct with Bombay.

32885. Have you been much in the Berar markets?—No.

32886. You are not aware of the fact that from Berar markets there are many complaints?—No, I have not gone there

32887. So that your belief that they are better off than you is not founded on personal knowledge?—No, I know nothing about Berar markets.

32888. *Sir Ganga Ram* . You have just listened to the evidence of one witness about prohibition of liquor. What is your view about it? I know personally that liquor is a favourite drink with Kayasths?—Not with all Kayasths.

32889. Would you favour the idea of prohibition?—Liquor drinking is bad and I think any sensible man will be opposed to it.

32890 Will your community object?—My community does not take liquor.

32891. I am not talking about you personally, but of the community as a whole?—There are 12 sub-divisions among the Kayasths.

32892. But your community as a whole takes liquor?—We shall be outcasted if we take liquor.

32893. If liquor were prohibited, you think your community or anybody else would not be put to any inconvenience?—When my community does not take liquor, how can they be inconvenienced?

32894 Would they not take to illicit distillation?—When they do not drink, why should they go in for it?

32895. *Sir Thomas Middleton*. Are there any members of your family who are graduates?—No. I am the only one who has passed the Matriculation examination.

(The witness withdrew.)

The Commission then adjourned till 11 a.m. on Saturday, the 29th January, 1927, at Hoshangabad.

R. S. DADU DWARKANATH SINGH.

Saturday, January 29th, 1927.

HOSHANGABAD.

PRESENT:

The MARQUESS OF LINLITHGOW, D. L. (*Chairman*).

SIR HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.	SIR JAMES MACKENNA, KT., C.I.E I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C B.	Mr. H. CALVERT, C.I.E., I.C.S.
Rai Bahadur Sir GANGA RAM, KT., C.I.E., M.V.O.	PROFESSOR N. GANGULEE.
	Dr. L. K. HYDER.

Mr. J. A. MADAN, I.C.S.
Mr. F. W. H SMITH. } (*Joint Secretaries*).

Mr. KALURAM POCHORY, representing the Agricultural Association, Gadarwara.

Replies to the Questionnaire.

QUESTION 2—AGRICULTURAL EDUCATION (i).—No; neither the trained teachers nor the institutions are in sufficient number in the Province to impart a sound knowledge of agriculture to the students in general

(ii) There is great need for agricultural education in this district. There is not even a primary school in Narsinghpur where pupils can be taught the broad principles of modern agriculture.

(iii) Yes, most necessarily. Gradually a large number of such trained teachers will be available.

(v) Only a few study agriculture for the sake of agriculture and improve the methods of cultivation on their holdings. Most lads learn agriculture for the sake of getting into Government service.

(viii) Nature study, school plots and school farms are all essential and beneficial. These create in the students a liking to receive higher training in agriculture. 3 to 5 acres of land should be attached to each school in rural areas, and an expert teacher should be provided to impart the training.

QUESTION 3—DEMONSTRATION AND PROPAGANDA.—(*a*) Intelligent cultivators should be helped with improved implements, these should be demonstrated on their farms from time to time when necessity arises.

(*b*) & (*c*) Improved implements might be demonstrated in different localities to which they are best suited by a sufficient number of skilful demonstrators from time to time. Every facility should be given to such demonstrators to make the demonstration a success If there were a number of trained demonstrators in a district, and if the most suited and useful implements are demonstrated by them, the demonstration should prove a success everywhere. These demonstrators should receive special training in the use of machinery from time to time in the course of their service at the leading institution to become familiar with the ever changing designs and improvements introduced in modern machinery.

QUESTION 5.—FINANCE—(*a*). For improvement of land and purchase of improved machinery, money should be advanced by the Government for long terms at a low rate of interest (*i.e*, at not more than 3 per cent).

(*b*) The low rate of interest of *taccavi* loans by the Government will induce the cultivators to make much use of the *taccavi*, but it should be seen that the cultivators make the right use of such loans, and to ensure this either the improved implements or the improved seeds should be given instead of cash or the malguzars concerned should be informed of the *kisans* taking such loans so that they may keep an eye on the proper utilisation of the money.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The poverty of cultivators, increased standard of living (when everything has gone dear), high rental and poor outturns of crops.

(ii) The cultivators take the loans either from the Government or from the local *sowcars* or malguzars to whom they mortgage their property (land)

(iii) Poor outturns, accidental deaths of the working bullocks or marriage of sons or daughters.

(*b*) The *sowcars* or moneylenders should be bound in the Province by legislation to give loans to the cultivators at not more than the settled rate of interest.

(*c*) Absolute-occupancy land should not be mortgaged. All the rules and regulations applicable to occupancy land should apply to absolute-occupancy land also, and the law should be amended accordingly.

QUESTION 8.—IRRIGATION.—(*a*) (i) There are no perennial canal facilities in the Narsinghpur district; they should be created there

(iii) The Government should help largely by advancing the loans at a low rate of interest to the cultivators for construction of wells for irrigation purposes. The Agricultural Engineer or his staff should advise them at what depths they would get economically water on their holdings, and supply them the most economical pumping plants direct from the large firms dealing in such plants thus avoiding the intermediaries and procuring the plants at a moderate cost.

QUESTION 10.—FERTILISERS.—(*a*) Improvement by the use of fertilisers would be possible if the Agricultural Department in this Province purchased the same direct from the manufacturers, and were able to dispose of the same at cost price. It would be better if some of the fertilisers were manufactured in India by the aid of the Government.

(*f*) If the Government forests are opened free to the agriculturists for taking out wood for agricultural purposes and fuel, this practice of using cowdung for fuel would soon vanish.

QUESTION 14.—IMPLEMENTS.—(*b*) Most of the improved implements have been found useful for agricultural work, but they are beyond the reach of an average cultivator on account of their high cost. It is therefore suggested that the Government should import such implements direct from the manufactories and sell them to the agriculturists at a cost price. The fact should be notified to the agriculturists who will apply for their purchase. It would be much better if the Government started a workshop for the manufacture of useful implements in India.

QUESTION 16.—ANIMAL HUSBANDRY.—(*a*) (i) The Agricultural Department should maintain a breeding farm in every district, and supply bulls to the desiring cultivators on the premium system.

QUESTION 18.—AGRICULTURAL LABOUR.—(*b*) The agriculturists are now feeling the pinch of scarcity of labour. The main causes are that the labourers are recruited by the railway companies and various mills on high wages. Further agricultural labour should be bound by legislation and some percentage should be fixed to each village so that labour may be available for agricultural work, or the most efficient and best suited labour saving machines should be demonstrated on a large scale in villages to economise labour.

QUESTION 19.—FORESTS.—(*a*) The Government should bring down the heavy grazing fee for a buffalo to the level of the fee for a cow or bullock when it is taken to the forests. There are many hilly malguzari villages adjoining the Government forests. It so happens that some cattle of these villages sometimes go astray and step into the limits of the Government forests. The penalty which a *kisan* or a malguzar has to pay to the Government is very very high. It should be reduced and the cultivators should be treated more kindly by the forest authorities.

QUESTION 20.—MARKETING.—(*a*) Existing market facilities are not satisfactory. Gadarwara and Kareli markets of the Narsinghpur district are referred to in this answer.

(i) Communication from interior to the central markets should be facilitated by good roads and temporary bridges across the broad perennial rivers in open weather.

(iv) *Dharmada*. A society founded in times past now exacts three pies on the sale of every 4 maunds of grain by a cultivator for giving alms to the poor. Other charity funds, and useless payments like the *hamali* charges, grain cleaning charges, charged

of a man who puts grain into the weighing pans while weighing, charges of a person who brings *adtya's* letters from the post office should all be checked. These charges are in addition to those which a cultivator has to pay to an *adtya* on whose shop he generally sells his grain, to the *dalal* (broker) who allures the cultivator to take his grain to a particular *adtya* for disposal and to the weighman

(iii) In the cultivating season, the *adtyas* make payment in notes for the grain sold off to the cultivators and when the cultivators ask for silver, they take a discount which varies from three to eight annas per hundred as the case may be. This should be checked. If need be, main or sub-treasuries in a district should help by way of changing notes from the *adtyas* for silver coins

(iv) There should be one sort of measurement throughout the district. The units of measurement differ very widely throughout the district and it is very difficult to make exact calculations.

(*d*) A Commercial Gazette, which may be published bi-weekly or daily in Hindi, is very badly needed, which may deal with market conditions, Indian or foreign, crop returns, Indian produce, etc.

Oral Evidence

32896 *The Chairman*: Mr. Kaluram Pochory, you have been good enough to provide the Commission with a note of the evidence which you wish to give. Would you like to add anything at this stage to what you have written or may I ask you one or two questions?—You can ask questions.

32897 Would you tell the Commission what is your own connection with agriculture?—I am an agriculturist, I own a village and I have got about 200 acres of home-farm

32898. What class of land is it that you own?—Malguzari.

32899. Is any of your land irrigated?—Yes, about 20 acres.

32900. By well?—By well and river.

32901 You have got one well?—Yes.

32902. How do you lift water from this well?—By *motes* made of leather and by means of bullocks

32903. What are your principal crops on the 200 acres?—Wheat, gram, *juar tur*, etc

32904. Are you growing any sugarcane?—I have started growing it this year.

32905. On the irrigated patch?—Yes.

32906. What varieties of wheat are you growing?—*Pissi* and A. 115.

32907. And what cane?—Mauritius.

32908. So that the Agricultural Department has been of some service to you in providing good varieties?—Yes, certainly.

32909. How many villages do you own?—One

32910 Is that malguzari?—Yes

32911. How many acres?—The area of the village is about 4,000 acres.

32912. Do you take an active interest in the cultivation of your tenants?—Yes, certainly. For instance, formerly I was not doing any cultivation and I have taken it up now with the idea of improving the holdings of the cultivators.

32913. Are you encouraging the villagers to sow the improved varieties?—Yes. Cotton was unknown formerly in my parts; now many cultivators have taken up cotton, ground-nut and sugarcane.

32914. Do you lend seed to the villagers?—Yes.

32915. How do you finance that advance?—I charge interest at 25 per cent.

32916. You take interest in kind?—Yes.

32917 Do you lend any money at all to the villagers?—Yes, I do.

32918. Have you any co-operative credit society in the village?—No.

32919. Have you had any experience of a co-operative credit society?—No.

32920. At what rate of interest do you advance money as a rule?—At 12 to 24 per cent per annum.

32921. Do you find that your villagers are able to make punctual repayments?—Not always.

32922. Depending, I suppose, on the season?—Yes.

32923. From your answer to Question 5 on page 516, I understand that you see some danger in the free granting of *taccavi* loans unless care is taken to see that the money is spent in proper directions?—Yes, certainly.

32924. In your experience, is an application by a cultivator for a *taccavi* loan usually granted if the request is reasonable one?—Yes.

32925. You think that the officers concerned are quite ready to grant *taccavi* loan where the applicant can show good reason for such a loan?—Yes; I was myself a Tahsildar and have got sufficient experience of these things.

32926. You suggest, in answer to Question 6 (*b*), "*Sowcars* or moneylenders should be bound in the Province by legislation to give loans to the cultivators at not more than the settled rate of interest". What is the settled rate of interest?—Not more than 9 per cent.

32927. That would bring your own rate of interest down by 3 points, would it not?—I do not mind that; I want that my cultivators should be benefited.

32928 Have you studied the history of attempting, at various times, at various places, to limit the rates of interest by statute?—No.

32929. Do you see any danger in that?—I do not know much about it

32930. You put forward a suggestion that a certain area should be irrigated. Do you found that proposal on any expert advice?—There is a river in the Narsinghpur district and there was a proposal to dig a canal from that river, there is some correspondence about it in the district office.

32931 For how many months in the year is there water in the river?—Throughout the year.

32932. Do you know whether the levels have been studied at all? Is it possible to run the water from the river?—I do not know much about that; but I know there was a proposal.

32933. How many pairs of bullocks do you keep?—8 pairs.

32934. Have you had any difficulty in feeding these bullocks in seasons of fodder shortage?—Yes, great difficulty

32935 What experiments have you made for the preservation of fodder?—I sow some fodder crops on my land; but I do not find sufficient fodder for my cattle.

32936. Have you heard at all of the making of silage?—Yes, I have heard of it.

32937. Have you ever seen it done?—Yes.

32938. Where?—I do it myself.

32939. You make silage?—Yes, but I cannot get sufficient fodder.

32940. Did you make silage last year?—No; I am doing it this year.

32941. For the first time?—Yes.

32942. *Prof. Gangulee*: Who suggested this to you?—I read about it in some books and in the leaflets which I received from Poona I am now digging pits and putting my fodder in them.

32943. *The Chairman*: Then you make the suggestion that the male buffalo and the she-buffalo should be charged the same grazing rates as the cow or bullock?—Yes; they have got different forest dues.

32944. Do you know why the forest dues are higher for buffaloes than they are for the cows?—The Forest Department takes about 4 to 8 annas for bullocks and cows while it takes Rs. 2 for buffaloes.

32945. You do not think the buffalo eats a good deal more than the cow?—Yes, I think it does.

32946. You want the buffalo to be fed at the same price as the cow?—In the interests of the agriculturists we ought to reduce the rates.

32947. Have you any buffaloes yourself?—No.

32948. Do you get any milk from your own cows?—Yes.

32949. What do you feed your milch cows on?—Grass.

32950. In the season of shortage what do you give them?—*Bhusa* and grass.

32951. Any grain?—Yes, also grain

32952. How much?—One seer per day per head.

32953 For how many months in the year do you give it?—Throughout the year.

32954. Do you make any difference in the case of cows giving milk?—Not much.

32955. What is the best yield in milk from your cows?—2 seers per cow.

32956. Then you complain of the penalty that the *kisan* or the malguzar has to pay to the Government in cases of an mals going astray. What has the cultivator to pay?—Sometimes a fine of Rs. 10 to Rs. 50.

32957. For a first offence?—The man is produced before the court and he is fined.

32958. Tell us, in your experience, what happens the first time when the man's bullock is found in the forest?—He is fined Rs. 10.

32959. For one single bullock?—For the whole lot, for the offence.

32960. *Mr. Calvert* Is it compensation or fine?— It is a sort of fine.

32961. Is it not compounded?—The man is produced before the court and he is fined by the court.

32962. I think it is compounded, it is a voluntary payment in order to avoid prosecution?—He is made to pay it

32963 But he pays it in order to avoid prosecution in the court?—He is prosecuted and produced before the court and then he is fined.

32964 *The Chairman*: Is there a shortage of labour in your district?—Yes; we are feeling the scarcity of labour.

32965. Do you cultivate your own 200 acres by hired labour?—Yes.

32966. Are you short of labour?—Certainly.

32967. You suggest, as a possible remedy, that agricultural labour should be bound by legislation. Do you mean that labour should be tied to the village?—Yes; sometimes in a village all the labour is taken away by the railway companies and factories. If there is legislation like this, a certain number of labourers will always be in the village and they will not leave the village.

32968. You suggest that the villager should be bound to the village; is not that old-fashioned?—My idea is that they should be made to work in the village on reasonable wages; otherwise people in the village suffer very much on account of shortage of labour.

32969. *Sir Henry Lawrence:* What is a reasonable wage?—4 annas.

32970. What is an unreasonable wage?—2 or 3 annas.

32971. You think the labourer can maintain his family on 4 annas?—If he remains in the village, his wife and children also do some work and earn wages.

32972 *The Chairman*: What wages are the labourers now offered?—When they get 8 annas a day they leave the village. For instance, those who are working on the railways are getting Rs. 16 a month and we pay them Rs. 8 in the village.

32973. *Hamals* means the charge for porterage?—Yes.

32974 *Sir Henry Lawrence*: Have you got any forest land of your own?—No.

32975. Have any malguzars got any forest land in your village?—No, my village is far away from the forest.

32976. There is no forest growth at all, or grazing land let out by malguzars?—No.

32977. And you consider the charges by Government for grazing in forests too high?—Yes.

32978. Should all grazing be free?—Not for all cattle. What I meant to say was that the agricultural cattle should be allowed to graze in the Government forest free because there is very little pasture land in our villages and the result is friction between the malguzar and the tenants, because the tenants take their cattle to graze in the malguzar's land in the night.

32979. The malguzars have got grazing land, have they?—Not all; some have, but the cultivators have not got any, and the result is that they take their cattle to graze in the land of the man who has reserved grass for grazing purposes and there is friction.

32980. Does the malguzar allow the villagers to graze their cattle on his land on payment of any fee?—There are not sufficient lands, and what he has is not sufficient for his own purposes.

32981. What fee does he charge for cattle grazing?—It is not the practice to charge any fee.

32982. You want the forest to be also free for bringing wood for agricultural purposes and for fuel?—Yes, I wish the people to preserve all their cowdung for manure. Manure is a most essential and necessary thing for the improvement of land and unless the people get their wood they cannot do it. they use cowdung fuel.

32983. Are the agriculturists allowed to take wood from the forests on payment now?—Yes.

32984. What are the rates of payment?—They pay 4 to 8 annas per cart-load.

32985. And for a head-load? 2 to 4 pice.

32986. And 4 annas for a cart-load? Is that too high?—It is not too high: it is high in this sense that the people take about 4 or 5 days to bring the wood and if they are allowed free wood then it would be a sort of a boon to them

32987. You do not think it would damage the forests?—No, I think that according to the number of members in a family a certain number of cart-loads of wood should be allowed free For instance, if a man has 4 persons he may be given two cart-loads of wood free for fuel purposes. In that manner he may be induced to preserve his cowdung.

32988. Is cowdung used at all for manure now?—Sometimes.

32989. What breed of cattle do you keep?—The *deshi* or local breed.

32990. Any Malvi?—No.

32991. Or Gaolo?—No the breed we keep as I said just now is called *deshi*, that is a local breed.

32992 Do you make use of any bulls kept by the department?—Not at present. I am getting one this year.

32993. Are there no bulls kept in this part of the country by the Department of Agriculture?—No, not in the Narsinghpur district.

32994. *Sir Ganga Ram*. I understand you have got 4,000 acres of land altogether?—My village contains 4,000 acres of land.

32995. Out of that you cultivate only 200 acres? What about the rest?—It is cultivated by the tenants.

32996. You are the malguzar of the 4,000 acres?—Yes.

32997. How much do you pay in revenue?—Rs. 3,800 for 4,000 acres.

32998. That is nearly one rupee an acre. What is the period of settlement?—The new settlement is for 30 years.

32999. Do you consider the settlement heavy?—Not very heavy, provided we get a good outturn. In the poor years we do consider it heavy.

33000. How far is your estate from this river Nerbudda?—My village is about 10 miles off.

33001. How far are you from the forest?—About 18 miles.

33002. Supposing this wood were given you free, would you want the Forest Department to bring it to your door?—I do not want that: all I want is to be given the wood free.

33003 That means you will save 2 pice per head-load and 4 annas per cart-load? Do you think that very heavy?—It is not heavy, but it will induce the cultivators to preserve their cowdung if they get their fuel free.

33004. Do you not grow cotton?—Yes.

33005. What do you do with the cotton stalks?—That is not used for fuel; it has never been used because it is not considered to be good.

33006. We in the Punjab use nothing but cotton stalks, they take the place of cowdung ?—That may be the case in the Punjab but the people of these parts do not.

33007. Why cannot you use it if we can ?—We can use it, but we are not doing so at present. Moreover our cotton areas are not large enough to allow sufficient supplies of cotton stalks being obtained.

33008. How much cotton do you sow?—Only about 50 acres in my village; cotton, really speaking, is not known in this part of the country.

33009. But every one knows what cotton is. The question is whether cotton would not grow here?—Cotton could be grown but the people are not doing it.

33010 That is not the fault of the Government. Do they impress labour for the railways ?—No.

33011. Supposing your labour did not go to the railways would you find employment for it all the year round ?—Yes.

33012. At the same rates ?—Not at the same rates as the railways pay.

33013. Why ?—Because we cannot afford to pay so much.

33014. Why should you grumble then ? Do you want to prevent the men from earning their livelihood ?—No.

33015. But it comes to that. You think 4 annas a day reasonable ? Can a man with a wife and family live on 4 annas ?—The wife is also working.

33016. And the children ?—The little children do not do any work but a boy of 8 or 9 years does.

33017. Is even 8 annas a day sufficient for the whole family ?—Yes.

33018. What size of holding would you consider to be sufficient for the support of a family ?—15 acres.

33019. Of land without any irrigation ?—Yes.

33020. And what would be gross income from 15 acres ?—It might come to about Rs. 200 a year.

33021. What do you put in the silos ? *Juar* ?—*Juar* generally : this is the first experiment.

33022. So far you have been keeping *juar* stalks for the winter season ?—The stalks are used for feeding cattle.

33023. Do you mix any green stuff with it ? - No.

33024. Does nobody in these parts ever mix any green stuff such as carrots and turnips ?—No.

33025. Why not ?—Because we do not grow turnips and carrots.

33026. *Sir Henry Lawrence* : Have you had any advice from the Agricultural Department on how to make a silo ?—Yes, I obtained that advice from the department.

33027. And have you seen silage being made on the farm here ?—Yes.

33028. *Sir Ganga Ram* : Have you any tanks in your village ?—No.

33029. Not even any wells ?—There are two wells only.

33030. No irrigation wells ?—No.

33031. Have you any idea as to whether irrigation can be brought here ? Have you any idea of tank irrigation ?—If any irrigation is possible in my part of the country, it is well irrigation or deep canal irrigation.

33032 From what river ?—From the Dudhi river.

33033. Where is that river?—Just on the border of the Narsinghpur and Hoshangabad districts.

33034. Has that been brought to the notice of the Irrigation Department?—Yes: it was under consideration.

33035. Have you a scheme for it?—Yes.

33036. And why was it dropped?—I do not know, but there are some papers about it in the district office.

33037. How far is the river from your place?—About 12 miles.

33038. Is that a tributary of the Nerbudda river?—Yes.

33039. That, you think, is a scheme which would bring irrigation to your estate?—It would command a very large area and at the same time it would pass through large areas under rice.

33040. What is the present yield of your crops? Take wheat for instance?—Not more than four times the seed.

33041. How many maunds per acre?—Not more than 5 maunds per acre.

33042. And cotton?—About 2 maunds.

33043. How much is a maund?—40 seers.

33044. Are you growing ground-nut?—I had been growing ground-nut but owing to the ravages of jackals I have given it up.

33045. Are you troubled by pigs also?—No.

33046. You are troubled by jackals only?—Yes; jackals and crows give a lot of trouble.

33047. Why do you not shoot them?—I do.

33048. Have you any difficulty in getting gun licenses for agricultural purposes?—I, personally, have never experienced any difficulty.

33049 Have the people of your village experienced any such difficulty?—I do not know.

33050. Tell us all your troubles. You have complained about irrigation What other troubles have you which concern agriculture?—There is no irrigation; there is no pasture land left by Government.

33051. You yourself can reserve land for pasture?—What I mean to say is that the cultivators do not reserve any land for pasture.

33052. That is not the fault of the Government. You can reserve pasture land?—Yes.

33053. Is there any Government pasture land which they do not throw open to you?—No.

33054. Scarcity of labour is one of your troubles?—Yes.

33055. Any others?—Manure is not preserved by the people.

33056. That is the fault of the people. Tell us the troubles for the relief of which Government can come to your assistance?—They can supply us with good implements.

33057. Free?—Not free. They can give *taccavi* loans for long terms at low rates.

33058. You would like to have improved implements?—Certainly.

33059. As regards wells, you say that there is no man to tell you where the water can be found?—That is so.

33060. You can find out by boring?—The people are so backward that they cannot take the trouble to go so far and get expert advice, and therefore Government should come to their aid.

33061. You work your well by a *mote*?—Yes.

33062. How many hours does the well keep the *mote* going before it becomes dry? —In the hot weather, it becomes dry in one or two days; it depends on the capacity of the well.

33063. If you work it continuously for one or two days, it will go dry?—Yes, in the hot weather, but not during this time of the year when there is ample water.

33064. You are not confronted with any other trouble?—These are the troubles.

33065. *Sir Thomas Middleton*: How far are you from Hoshangabad? Where is your village?—My village is about 60 miles off from here.

33066. Is it close to a river?—I have got a river in my own village.

33067. You mentioned that you have one well and that you irrigate 20 acres from it?—I do not irrigate 20 acres from the well; I have got 20 acres of land which can be irrigated.

33068. How much can you irrigate in one season?—This year I am irrigating about 5 acres.

33069 At the bottom of page 516, you say that advances should be given to the villagers in kind?—Yes.

33070. Or, if not given in kind, that the malguzars should be told that money is given?—Yes.

33071. And you think that the malguzars will supervise the proper use of the money?—Certainly

33072. Is that likely? Do you think that the malguzars will take sufficient interest in their tenants to see that they spend their money properly?—Yes Most of them will do that; those who are well-wishers of the tenants will do it.

33073. How many of the malguzars in your district would you class as being well-wishers?—I think about 75 per cent

33074. You have 200 acres which you are cultivating yourself, and you have told us the crops you are cultivating I want to know what area of each crop you grow on your 200 acres. How much wheat do you have this year?—40 acres.

33075. You grow gram; is it mixed with wheat, or is it separate?—It is separate, I grow 40 acres of that.

33076. And how much of *tur*?—About 20 acres; it is a *rabi* crop.

33077. How much *juar* do you grow?—About 40 acres.

33078. And cotton?—Very little this year, about 10 acres, and *til* 10 acres.

33079. How many men do you employ?—I employ 11 servants.

33080. How much would a boy of 8 or 9 years earn?—2 to 3 annas per day, because we keep boys for taking the bullocks and cattle for grazing.

33081. But you engage only one or two boys for that purpose; the boys cannot get regular work with you at 3 annas a day?—It is not regular. Of course, I keep one or two boys for grazing cattle.

33082. A man gets a wage of 4 annas?—Yes.

33083. What is a woman's wage?—3 annas

33084. How many cattle have you got?—31 cattle.

33085 First of all, you have told us the number of your bullocks?—Yes, it is 16.

33086. But you have some cows?—I have 15 other cattle.

33087. You send these 15 other cattle to the forest for grazing?—No.

33088. You keep them yourself?—Yes.

MR. KALURAM POCHORY.

33089. You complained that there is no pasture land in your village, but you have told us that they can get grazing for 3 to 4 annas per cow and Rs. 2 per buffalo. Is it likely that, if a man can get grazing at that rate, he will keep land of his own for pasture?—They have to go to the forest.

33090. The forest is not at a very great distance?—It is at a distance of 18 miles.

33091. Is there not the practice of giving the cattle into the charge of a herdsman who takes them to the forest?—That is not the practice We have to keep our own men.

33092. Even if you keep your own man, you are paying him only 4 annas a day?—Yes.

33093. Is it not very cheap grazing?—Yes, for the man who has a good income, but for the poor people it is rather high.

33094. How can you expect people to reserve a pasture when they can get grazing so cheaply?—Because, when they have got a holding, they must leave a portion for grazing

33095. You estimate that the yield of average land in your district would be Rs. 13 to Rs. 14 a year?—Yes.

33096. Are you growing any new wheats?—I am growing A. 115.

33097. *Sir James MacKenna*. You are speaking for the Gadarwara Agricultural Association?—Yes.

33098. How long has this Agricultural Association been in existence?—For the last three years.

33099 Who are its members?—There are malguzars and cultivators.

33100. What is the proportion of malguzars and cultivators? Are there more malguzars than cultivators?—They are mostly malguzars.

33101. What are the objects of the Association?—It has to consider how to improve the cultivation.

33102. By what method do they go about doing it?—At present they confine themselves to good seed

33103. The Association produces good seed?—They have collected some money for the purchase of good seed.

33104. They buy seed from the Agricultural Department?—Yes.

33105. Do you think that the Association is doing any good? -Not much good at present, but it will do good if it goes on with the work.

33106. Is there much enthusiasm?—Yes.

33107. How many non-agriculturists are on the Association?—None.

33108. It is purely agricultural?—Yes.

33109. You say that there is scarcity of fodder in your village. Do you grow *juar*?—Yes.

33110. You do not use the stalks for fodder?—We do.

33111. That meets the difficulty of fodder shortage to a certain extent?—Yes.

33112. Is it not the general practice to cut the *juar* at the top and leave the stalk for grazing?—We also cut the stalks into pieces.

33113. At what depth do you get water when you dig wells?—18 to 30 feet.

33114. What is the cost of digging a well of that depth?—It comes to about Rs. 400 to Rs. 500 per well. I have recently sunk a well, and it has cost me Rs. 500.

33115. Would it not pay you to dig a number of these wells for irrigation of wheat?—It would, but I have got only one well, because we have the river and I am going to set up a pump.

33116. What variety of cotton are you growing now?—Cambodia and *roseum*. I get the seed from the Agricultural Department.

33117. When do you sow it?—In the month of June, just at the beginning of the rains. I grow it without irrigation.

33118. Have you tried cotton before?—Yes.

33119. What kind did you try then?—The *deshi* variety.

33120. How did that pay?—I think it did all right.

33121. What is the position in regard to cotton?—The prices of cotton have gone down since last year, and that is why I have not sown much cotton this year.

33122. You have 4,000 acres of land?—Yes, in the whole of my village.

33123. How much of that is under cultivation?—About 3,500 acres of land is under cultivation; the rest is covered by roads, *nullahs*, etc.

33124. Is there any area available for grazing at all?—We have reserved 25 acres of land this year for the purpose, but many of the tenants live outside the village; they are *pahadis*.

33125. *Prof. Gangulee*: Who is the chairman of your Association?—I am the chairman.

33126. Who is the secretary?—Another gentleman.

33127. Do you meet often?—Once a month.

33128. Regularly?—Not regularly.

33129. When you meet, what do you discuss? Do you have a proper agenda?—Yes. We have discussions about agricultural work. Sometimes, I make some experiments, and I explain them to the other people.

33130. Do you invite any members of the Agricultural Department?—Yes.

33131. Do they come?—Yes, they come.

33132. And discuss matters with you?—Yes.

33133. You said something about the gross income from your crops, what is the cost of cultivation per acre of wheat?—It comes to about Rs. 15 per acre

33134. What is the cost of cultivation per acre of cotton?—That comes to the same thing.

33135. Do you find one crop is more paying than the other?—Cotton is found to be more paying when we have good prices, but this year we have not got so much profit.

33136. What variety of wheat do you grow?—*Deshi*, and A.115 from the Agricultural Department.

33137. That is a new variety?—Yes

33138. Do you find that A.115 grows better?—Yes.

33139. And yields better?—Yes, and pay better.

33140. Do you get a premium price from t —Yes.

33141. How many acres of A. 115 have you?—I have 10 acres under A. 115.

MR. KALURAM POCHORY.

33142. Do you sow your own seed?—I have been saving it for the last three years; now it is not so good, so I will change it this year and get it from the department.

33143. You said you grow a certain quantity of *roseum*?—Yes.

33144. Is the *roseum* variety of cotton deteriorating?—I have only sown it for two years, I did not get good prices last year, and this year I did not sow any.

33145. How many labourers have you on your farm?—I have 11 servants, and of course I get other labourers whenever necessary.

33146. You have 11 servants for 200 acres of land?—Yes.

33147. What average wage do you give? You said 4 annas?—Rs. 8 per month.

33148. That works out at about 4 annas a day?—Yes.

33149. Are you connected with the Powerkhera School here?—No, I am not.

33150. Do you know any of the boys there?—I know the boys but I am not connected with it.

33151. Do you know the average messing charge per boy in that school?—No, I do not.

33152. It comes to about Rs. 7-8-0?—Yes, probably.

33153. That works out at 4 annas per day per boy?—Yes, but there is a difference between their food and the food of the labourers in my employ.

33154. On page 517 you speak of the most suitable and useful implements. What sort of implements have you in mind?—I mean motor tractors, they have been found useful in the *sehra* land, but not in the black cotton soil; they have been found very useful in eradicating *kans*, then there is the monsoon plough and the other ploughs.

33155. Are you using any plough?—Yes, monsoon ploughs.

33156. Do you find any difficulty in regard to your draught bullocks?—No.

33157 So that, when you speak of implements, you are referring chiefly to the motor tractor, are you?—Yes, the motor tractor, and other implements; for instance, the winnower and thresher.

33158. Are you using any manure?—Yes.

33159. Any drill?—No, I am not using drills One drill has been sent by the Agricultural Department to our district, but I have not seen it yet.

33160 Have you any experience in marketing? Where do you market your produce, your cotton and wheat?—In Gairawai and Koralli.

33161. You say the marketing facilities are not satisfactory?—Yes.

33162. On page 518, you speak of the charges of a person who brings *aditya's* letters from the post office?—Yes.

33163. What is that charge?—He takes a handful of grain for bringing a letter from the post office for the *aditya*, the commission agent.

33164 *Mr. Calvert* What is the price of land around your village?—Rs. 200 to Rs 300 per acre

33165. Is the price going up or down?—It is going up.

33166 In discussing indebtedness, you give as one of the reasons the increased standard of living?—Yes.

33167. Is the standard of living rising?—Things are dear.

33168. You do not say that, you speak of the increased standard of living. Has the standard of living risen?—Yes, to some extent.

MR. KALURAM POCHORY.

33169. And you think the standard of living is a cause of their borrowing?—Yes, that is also one of the causes.

33170. *Sir Henry Lawrence*: Have you been engaged in agriculture all your life?—No, my father was an agriculturist; I was in Government service; since I left Government service I have been an agriculturist.

33171. What was your Government service?—I was in the Settlement Department as Assistant Settlement Officer, and I was Tahsildar

33172. How long have you been managing your own farm?—For the last five or six years.

33173. Do you ever get any officer of the Agricultural Department to advise you?—Yes, often.

33174 What kind of officer?—The Deputy Director of Agriculture, the Extra-Assistant Director of Agriculture, and the Agricultural Assistant

33175. They all come and see your land?—Yes, and I myself go to Government farms to see things.

33176. Are you a Brahmin?—Yes

33177 *Sir Ganga Ram*: Are there many Brahmins owning land in this Province?—Yes, in my district there are many Brahmins who are malguzars and cultivators.

33178. How do they get hold of the land?—I do not know the old history.

33179 Was it given to them in charity?—No, not charity.

33180. Then, did they buy land?—Yes, they have bought land.

33181. But how did they become malguzars?—I am sorry, I do not know the old history of how they became, but they have been for many generations in the district.

33182 *The Chairman*: I want to be certain that I do not misunderstand your views about agricultural labour and the possibility of what you call binding agricultural labour by legislation Would you tell me again quite shortly what your suggestion is?—I mean to say that sometimes it happens that all the labourers go away and leave the village to work on the railway works, and so on. Of course, a certain percentage should be fixed to be kept in the village for agriculture

33183. But is your suggestion that they should be restrained from leaving the village to take on temporary work?—Yes.

33184. That they should be prevented from leaving the village?—Yes, the contractors should be prevented from taking away the labourers.

(The witness withdrew.)

Mr. K. P. PANDE, LL.B., M.L.C., representing the Tahsil Agricultural Association, Sihora, Jubbulpore.

Replies to the Questionnaire.

Question 2.—Agricultural Education.—(i) There is one agricultural college which is affiliated to the Nagpur University and one agricultural middle school at Powarkhera.

(ii) Owing to shortness of finances, the question of agricultural education has not been taken up on an extended scale though there is an urgent need for extension of teaching facilities in almost all the districts of the Central Provinces and Berar.

(iii) No recruitment of teachers for rural schools should take place from the classes which have no experience of agriculture. In this connection, Government should waive the enforcement of the 25 years rule.

(iv) The attendance is not quite satisfactory when we take into consideration the number of agriculturists, the area under cultivation and the number of boys attending ordinary schools People have not much faith in the activities of the Agricultural Department, firstly, because they do not want to introduce improved methods of cultivation owing to financial and other difficulties, and secondly, there are no prospects for boys trained at such schools. If the boy passes his middle school examination he can go to the normal school and become a teacher after training, while in case of agricultural education he would have no prospects.

(v), (vi) and (vii) Government should liberally give scholarships and open as many demonstration farms as there may be vernacular middle schools in the district and should also attach one farm to every normal school There are no incentives at present. Yes, modifications in existing courses of study should be effected. Schools in rural areas should have agriculture as a compulsory subject.

(viii) The present state of nature study is such that it encourages cramming and consequently is of no practical use. There are no plots at present attached to schools and the number of demonstration farms is still less.

(ix) There are very few students who have studied agriculture in the existing institutions and almost all of them are in Government service.

(x) Agriculture can be made attractive to middle-class youths by introducing more paying crops, by advancing them capital at a very low rate of interest and by giving them plots for cultivation.

(xi) No steps have been taken for improving the technical knowledge of students who have studied agriculture.

(xii) Adult education in rural tracts can be popularised by opening night schools.

(xiii) Agricultural education should be arranged by District Councils, Co-operative Central Banks and village panchayats. Government of course shall have to retain such powers as they deem necessary for co-ordinating the activities of such bodies. All charges in this connection should be deemed to be charged on land revenue.

Question 3.—Demonstration and Propaganda.—(*a*), (*b*) and (*c*) Intensive propaganda and demonstration have been successful in influencing and improving agriculture. There should be one demonstration plot for a group of 50 villages. All results obtained from experimental and demonstration farms should be printed, distributed broadcast and hung up at prominent places in rural schools

(*d*) Intensive propaganda for selected seed in Sihora tahsil of district Jubbulpore through private seed farms, co-operative credit societies, the Agricultural Association and by the Department of Agriculture has resulted in the substitution of better yielding varieties in place of the local seed of inferior quality. There are 100 private seed farms which grow and supply selected seeds. Winnowing machines are also becoming very popular.

Question 4.—Administration.—(*a*) There should be no interference from the Government of India. The Government of India may take up only such activities

as may be beneficial to the whole of India. Provinces should be left to develop on their own lines.

(*b*) No.

(*c*) (i) Before the introduction of the Reforms scheme, the Agricultural and Veterinary Services were not in touch with the rural population, but now it has changed and therefore the work of these services is being more appreciated.

(ii) The railways should be prevailed upon to give concessions to agricultural produce and livestock when transported for the improvement of agriculture. In some cases it would be necessary to put restraints on the exports of agricultural necessities such as fodder, bones, oil-cakes, cows and buffaloes of good breeds.

(iii) Roads are one of the most crushing needs of the rural areas They are the arteries along which the life blood of a district flows.

(iv) The existence of the Meteorological Department is not much known to the agriculturists

QUESTION 5.—FINANCE.—(*a*) Short-term loans should be advanced by co-operative credit societies and the long-term loans should be advanced by Government.

(*b*) There should be no delay in advancing *taccavi* and land improvement loans. Agriculturists do not anticipate their need before it has actually set in. This habit is certainly not justifiable on their part, but it has to be met all the same. It would be better that a credit limit should be fixed beforehand so that there might be no delay in financing them.

The second cause of its unpopularity is that all sorts of coercive processes are used in making recoveries This sometimes causes great hardship If special facilities of summary nature which are given by the legislature to Government for realising its loans were removed or modified, such loans would become popular. If those facilities are to be maintained, then the rate of interest should not be more than 3 per cent

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(*a*) (i) The following are the main causes —

(1) Previous loans which have not been cleared off for generations, (2) agriculture alone is not a paying concern, (3) high rates of interest, (4) seasonal calamities, (5) absence of facilities for marketing goods, (6) high rates at which the cultivator has to purchase his necessities of life, (7) size of holdings, (8) excessive fragmentation, (9) deadly forms of cattle diseases, (10) damage to crops by wild animals, (11) factions and litigation, and (12) the land revenue policy of Government

(ii) Sources of credit—

(1) The village moneylender	. 90 per cent.
(2) Co-operative societies, Government and others	.. 10 per cent.

(iii) Seasonal and social difficulties are the causes which prevent repayment.

(*b*) The following measures, if adopted, would considerably lighten agriculturist's burden of debt.—

(1) Establishment of Conciliation Boards, (2) better facilities for advancing money at low rates of interest, (3) giving such facilities as may increase the yields, (4) better marketing facilities, (5) elimination of middle men, (6) introduction of more paying crops, (7) establishing agricultural and cottage industries.

The Usurious Loans Act. Such Acts do not produce as much result as is expected of them In spite of such Acts on the Continent and the United Kingdom, sharks are in existence who can always find out new methods of defeating the provisions of such Acts

Mortgages should be redeemed and facilities for long-term credit established.

(*c*) As long as arrangements for better facilities are not made, it is not desirable that mortgage and sale rights should be encouraged. If such rights are conceded, it may result in dispossessing 60 per cent of cultivators of their land by moneylending classes. I am against non-terminable mortgages. Without making any enquiry into the economic condition of cultivators, Government cannot take any step either one way or the other.

MR. K. P. PANDE.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(*a*) and (*b*) Voluntary consolidation of holdings has proved to be a failure. Without making necessary changes in the Tenancy and Land Revenue Acts, no substantial result can be achieved. The obstacles in the way of consolidation are (1) the Hindu and Mahommedan forms of inheritance, (2) conservatism, (3) absence of an agency which can bring about such consolidation and (4) absence of legal provision.

Legislation is necessary for the compulsory consolidation of holdings and for extending the right of pre-emption.

QUESTION 9.—SOILS.—(*a*) (1) *Bunding* of land should be encouraged for the improvement of soil. This system has considerably improved soils of the Jubbulpore *haveli*.

QUESTION 10.—FERTILISERS —(*a*) Yes, greater use of natural manures and artificial fertilisers can be made. For this intensive propaganda and persistent demonstration of improved methods of their collection and proper application are necessary. The export of such material as may be utilised for manurial purposes should be stopped, such as bones, oil-seeds and oil-cakes.

As long as fertilisers are not manufactured in India and as long as their price have not been considerably reduced, they would never become popular. The immediate problem is how to adjust the prices of these fertilisers to the extra yield which they give. If these fertilisers are manufactured in India, they can be within the reach of everybody. In order to illustrate this point, it may be pointed out that the saltpetre industry of the United Provinces is made a Government monopoly. In such a big country as India is, it is not impossible to find out facilities for the manufacture of artificial fertilisers in some parts of the country, but the matter has not received the serious attention of the Government.

(*b*) To prevent fraudulent adulteration of fertilisers, legislation should be undertaken at once to license dealers in such goods. The Government Chemist may also be instructed to inspect such depôts.

(*c*) To popularise fertilisers, they should be distributed free in the beginning and their results widely demonstrated and published. There should be supply facilities like those of stamps and liquors They have been tried in the case of more paying crops such as cotton and sugarcane and they seem to have been successful. But it is very doubtful whether in the case of cotton they would be paying in view of the decline in prices.

(*f*) The fuel problem is very important for the poor cultivators At all the places in such tracts which have very few roads, cowdung has to be used for domestic purposes. Cultivators do realise the manurial value of cowdung, but being helpless they are using it as manure in the absence of other kinds of fuel. In order to deal with this problem, railway companies should be prevailed upon to charge minimum freight on inferior kinds of coal as are not suited for industrial purposes The number of such coal mines in India is considerable. Many of them are not being worked as their quality does not find a ready market If such mines can be worked even only by getting subsidies from Government, they should be encouraged to start work. Opening up of Government forests and better facilities should also be considered. In all such areas, where firewood is available owing to the vicinity of jungles, the practice of substituting cowdung for fuel should be seriously dealt with through village panchayats.

QUESTION 11.—CROPS —The main crops of Jubbulpore district are wheat, gram, oil-seeds and paddy.

The yield of these crops has not been going up. The introduction of selected seeds has resulted in some good to the agriculturists and the dealers in grain.

(*a*) (i) The value of pure and selected seeds is being realised as the crop of such seeds fetches a higher price in the market. The general estimate is that they get from 5 to 7½ per cent more than what they get for their impure and mixed grain.

We think the time has come when the Government should take steps to encourage the certified seed farmer to keep his seed as pure as it ought to be by supplying him seed of new and improved kinds at 5 per cent premium in kind. It is very doubtful that the existing seed of the newly introduced varieties is likely to continue its high yielding nature. It might have been very suitable

to the soil once but now it is gradually exhausting the soil. The question which should be taken up now is, how can fertility of the soil be increased? This means better bullocks, better cultivation of land and better seeds. Unless these three aspects of the problem are taken up simultaneously, no perceptible improvement can be achieved. The cultivator is unable to meet these difficulties because he has not got sufficient capital at his disposal. While during the War prices of cereals had considerably gone up, he was able to purchase his other necessaries out of the profits which he had made in prices His standard of living has also gone up The present position is that the prices of cereals have gone down, but there is not a corresponding decrease in the price of other commodities. Labour has also become scarce and dearer than what it was before 1918, the chief causes being:—(1) Rise in prices, (2) the diversion of agricultural labour to other industries which came into existence during the War, (3) the booming of other industries which came into existence after the War out of the capital which had accrued to the country from the profits which India had made during the War. To be short, unless food crops either secure better prices or their yield is increased, the agicultural situation is bound to be gloomy. The problem of manure should also be taken up.

Introduction of new crops requires more money which unfortunately the cultivator does not possess. Moreover, he is not in a position to make experiments which in case of failure may reduce him to a state of utter poverty and indigence We would suggest that Government should advance money free of interest for the cultivation of new crops for three years to approved and *bona fide* cultivators.

(ii) As regards fodder crops, the question has not been dealt with so far. The difficulty is that the rainfall of the district is about 60″ and the winter minimum temperature is 42° F. Fodder crops excepting grass do not thrive well. In order to solve the fodder problem, it is necessary that we should either have a catch crop or a rotation crop.

Letters to all the Provincial Heads of the Agricultural Departments and to the Pusa Institute were sent by the Association, but no one was able to give sound advice in this matter.

(iii) Selected seeds should be supplied from Government, Court of Wards and certified farms.

A seed scheme sketched out for introducing selected seeds through the Agricultural Association is being tried in the north of the Provinces.

(iv) Clubs for killing wild animals should be established in all affected areas. Government should issue licenses in all such areas where much damage is done by wild animals. Government should also give rewards for the destruction of wild animals Government forests should not be allowed to continue as breeding farms for such animals. A number of villages in the vicinity of Government forests are the worst sufferers in this respect. It should not be understood to mean that village *shikaris* should have free access to Government forests and be allowed to indulge in slaughtering ruthlessly all sorts of wild animals, but they should be permitted free of charge to kill such animals only as do damage to crops

(*b*) Greater facilities should also be given to cultivators. No suggestion can be made for any general replacement of the present crops. Along with the existing crops where facilities exist potatoes, sugarcane, ground-nut, chillies and *sann* hemp for fibre may be encouraged. Irrigation facilities from Government tanks for sugarcane and such other crops should be at low rates. The present practice of increasing water rates from year to year is detrimental to the progress of commercial crops which are not yet fully established in the Province.

QUESTION 12.—CULTIVATION.—(1) The tilling of land can be done with bullocks and *bakhars* in the summer season, but ploughing can only be done with ease from the 1st of October to the end of December; unfortunately in this very period cultivators are busy in harvesting their *kharif* crops and in sowing *rabi* crops; preparation of land therefore is never done on a large scale. Government can help in the matter by maintaining regular teams of ploughs and *bakhars* worked by power on the contract system.

The Department of Agriculture through the Sihora Tahsil Agricultural Association has done some work in this connection which has been very much appreciated by cultivators. The demand is steadily growing up but the department is not in a position to help them much. In order to meet the

demand of cultivators steam tackle has been purchased during the present financial year.

(ii) There is no customary rotation of crops and there can be none unless we can find out a second crop which would pay as much as wheat does without in the least affecting the fertility of soil. The present practice is that wheat and gram are mixed up in proportions varying, for example, from 70 per cent to 30 per cent, 90 per cent to 10 per cent and so on Gram being a leguminous crop helps to maintain fertility of land.

QUESTION 13.—CROP PROTECTION.—(1) There is not much of crop protection in the northern part of the Provinces. Methods suggested by the department are generally expensive and therefore are not taken up. As regards rust, the department has produced varieties of wheat which are able to resist rust.

(ii) It is desirable that cheap methods should be introduced for guarding against infection, but there should be some provision to compel the owners of neighbouring fields to co-operate with each other

QUESTION 14.—IMPLEMENTS.—(*a*) Before we take to new agricultural implements and machinery, we should see that the existing implements are improved 90 per cent of cultivators live in villages which have absolutely no facility for repairing machinery. Firstly, because spare parts are not locally available; secondly, if they be available, the mechanic is not available; thirdly, prices of such implements are prohibitive, and fourthly, owing to the small sizes of holdings, no ploughing or other agricultural machinery can be successfully employed.

The general opinion is very much against machinery. The working season is so limited and the work is so pressing that the mere idea of breakdown of the machinery prejudices people against it for a number of years.

The manufacture of agricultural implements should be taken up by the Government of India at some central workshop and Government should make no profit over it.

(*b*) Demontrations and exhibitions should be held in all towns having a population of 5,000 people regularly, secondly, there should be facilities for repairing machines, and thirdly, prices of spare parts should not be inordinarily high. Winnowers, ploughs and sugarcane mills are being manufactured in India and are becoming popular.

Private firms should be encouraged in the production of agricultural implements.

As regards their distribution and sale, smaller implements should be stocked by co-operative societies and local bodies

QUESTION 15.—VETERINARY.—(*a*) There is no reason for the Civil Veterinary Department remaining independent when its objects are cognate to those of agriculture. The Director of Agriculture should be a permanent hand on whom permanent responsibility for running the department should rest. He should have a decent salary and should have nothing higher to look up to. As far as possible he should be an Indian. He should be only an administrative head and should act as Secretary to Government for his departments. We insist on his being an Indian so that the experience which he may have acquired at the expense of Government may not be wasted after retirement.

(*b*) (i) The present dual control and division of expenditure partly by Government and partly by local bodies is undesirable. In its present form local bodies do not realise their responsibility in the matter as they cannot have full control over the working of dispensaries

(ii) There is need for expansion.

(iii) We have no objection in transferring control to provincial authority provided they can be in touch with local needs

(*c*) (i) Agriculturists cannot make full use of dispensaries, firstly, because they are not fully aware of their existence, and secondly, because the department is not equipped with facilities for dealing promptly with deadly forms of cattle diseases, and thirdly, because they cannot get hold of the Veterinary Assistant who has to tour throughout the whole tahsil sometimes having a radius of 25 miles. It would be better that for ordinary diseases there should be a man of Lower Subordinate Service in every Revenue Inspector's circle. Unless this is done the department would never be able to do any substantial service to

cultivators. The department should carry on more propaganda than it has been carrying on so far. For administrative control it should remain under the charge of the Extra-Assistant Commissioner of Agriculture. The department should also publish small pamphlets in the vernaculars about various diseases and their medicines.

(ii) We have never been able to feel the existence of touring dispensaries.

(*d*) The first difficulty met with in dealing with contagious diseases is that villagers seldom take their cattle to dispensaries When an epidemic breaks out on a large scale, its existence is found out and the matter is reported through the police and revenue agencies to the dispensaries, and if the Veterinary Assistant is on tour it goes on spreading and cattle die in numbers No legislation would be effective unless and until sufficient propaganda has been done to acquaint the people with the department and diseases. Legislation would result in the oppression of poor people by petty officials It would create a great deal of discontent among ryots

(*e*) There is difficulty felt sometimes in securing serum in time It is not stocked in sufficient quantity in the dispensaries and has to be obtained from the Research Institute.

(*f*) Ignorance of villagers and non-availability of serum at the proper time are the obstacles in the way of popularising preventive inoculation No fee is charged in rural areas

(*g*) A provincial veterinary research institute should be established in each Province to provide further facilities where they do not exist at present Officers of both Imperial and provincial institutes should take up the work of research, but the provincial research work should be carried on in consultation with the Muktesar Institute The general principle should be that the Muktesar Institute should not supplant the local institute. The Agricultural Adviser to the Government of India should be entrusted with the supervision of this department also. Creation of new different heads would be perpetuating the mistake which has been done in the Province.

QUESTION 16—ANIMAL HUSBANDRY—Improvement of livestock both for agricultural and dairying purposes is one of the crying needs of agriculturists. Improvement of such cattle would mean better farming, better business and better living. Formerly, the practice was that every householder had a cow which used to supply him with milk for domestic use and bullocks for agricultural purposes Now he has none. His sons are ill-fed and he has to pay more than Rs. 150 for a pair of bullocks for which he used to pay only Rs. 60 previously In bigger towns where living is dearer, *gaolas* maintain cows as long as they yield milk and afterwards they dispose them of to butchers. A large number of cows of good milking breed find their way to slaughter houses. In view of the scarcity of agricultural cattle, the high rate of infant mortality and shortness of average length of life, the slaughter of cows should be stopped at once. Improvement of breeds both for draught and milking purposes deserves more attention from Government than it has received so far.

(*a*) (i) Bulls of good breed should be kept for service in a group of 50 villages. They should serve cows brought to them free of all charges. The District Councils, Central Banks and other local bodies would be too glad to maintain such bulls The practice of Government to discourage *Brahmini* bulls should also be given up.

(ii) The dairying industry in India cannot flourish unless Government does something to check the import and adulteration of *ghi* and the practice of adulterating milk with water.

(*b*) (i) There is no over-stocking of common pasture What is being done is that all good pastures are being converted into fields. Over-stocking is now an exception.

(ii) Grass borders in tilled fields are also being reduced

(iii) The export of dry fodder should be discouraged by legislation. Wheat straw is being exported from some of the districts of the Central Provinces to the United Provinces In many cases, cattle have to find out fodder for themselves. In the majority of cases there is no stall feeding, the consequence is that cattle are deteriorating physically and dying prematurely and sometimes they are slaughtered for meat purposes.

(iv) Cultivators would not grow green fodder in dry seasons unless they can be convinced that fodder crops would pay them back. Unless dairying industry is pushed forward by Government, cultivators are not likely to do anything substantial for maintaining their cattle.

(v) They do not get sufficient mineral constituents in their food and therefore the salt tax should be abolished altogether. From the figures of the Government of India it is clear that when a high duty is imposed on salt its consumption goes down and when its tax is reduced, consumption goes up. Government is, therefore, not likely to lose much in the long run There is no reason why the manufacture of local salts should be discouraged.

(c) Fodder shortage is most marked in the months of December, January and February and during the rains. Cattle get fodder of poor quality throughout the above period, and they take about four weeks to come to their normal state afterwards

(*d*) Government forests should be opened; new catch crops and rotation crops should be experimented on. Seeds of good grasses should be supplied, and the weeding of obnoxious weeds should be encouraged.

(*e*) Any encroachment on village pastures should be severely dealt with. Provision should be made in the Land Revenue and Tenancy Acts for maintaining enough pasture land in every village, all pasture lands should be specially marked and set apart on the village maps. In all settlement operations such lands should be revenue free

If the landowners be exempted from the payment of land revenue over pasture lands, they would keep such areas for grazing purposes. The practice of the Central Provinces Government in recent settlements has been to assess even the grazing areas If the State were to make a little sacrifice, we are sure that landowners would respond much more liberally It is absurd on the part of Government to expect landholders to make concessions when they themselves are not prepared to do anything of the kind Secondly, where there are irrigation facilities, cultivators should be given special concessions to grow *sann* hemp in dry season with the help of irrigation water which will serve the purpose of green fodder for cattle in summer and that of manure for the succeeding crop of rice in the same season.

QUESTION 17 —AGRICULTURAL INDUSTRIES.—(*a*) It is very difficult to give an accurate estimate of the number of days for which a cultivator has to work on his holding during the year. Conditions vary from tract to tract In many places he has to be busy throughout the year, especially in double cropped areas where he has to look after his fields either in their preparation, sowing, harvesting of crops, but it can be safely said that, with the exception of 6 months, he can more or less busy himself with subsidiary industries and can safely devote a part of his time to them. For 3 months generally, he has not got much work for the whole day In the case of *kharif* crop areas, he has 6 months leisure if he does not move about.

(*b*) and (*c*) Subsidiary industries can be encouraged by supplying cultivators money at low rates of interest, by doing experimental and research work, by keeping mechanics to repair their machines, by supplying them with goods, by eliminating as many middlemen as possible, by arranging markets for them and by patronising and purchasing such locally manufactured goods

The following subsidiary industries can very well occupy their spare time :—

Cording, spinning, weaving, carpentry, smithy, silver smithy, tinkering, lace making, dyeing and painting, match making, knitting, *bidi* making, carpet and *niwar* making, paper and card-board manufacturing, hulling, milling, preparation of pulses and oil pressing.

(*e*) Government should do all experimental work in connection with the above subsidiary industries The move of industrial concerns to rural areas would mean the ruin of agriculture as the tendency is that agricultural labour is paid in kind. Moreover, labour is better paid in other industries Industrial concerns will pay better wages and besides they would be able to employ their men throughout the year. The result would be that there would no labour be available for agriculture.

(*f*) A more intensive study of each rural industry should be made. It would not be out of place to suggest that an exhibition pertaining to agriculture and

industries subsidiary to it should be held in Provinces turn by turn every year. In such exhibitions practical demonstrations of agricultural machines, implements and tools of industry should be given. Railway companies should be induced to give special concessions to exhibitions and visitors intending to visit such exhibitions. If exhibitions are held and exhibitors are encouraged to demonstrate the utility of tools and machines, the whole thing can be studied at a glance. The introduction of new crops such as sugarcane, potatoes, vegetables, etc., where they do not exist and where there are facilities for growing them, might lead to greater rural employment.

(*h*) Agriculturists cannot devote their spare time to improve the health conditions of their own environment unless Government comes forward with liberal grants for encouraging such efforts on their part. Government ought to have a clear cut scheme about sanitation of rural areas which have been all along neglected.

QUESTION 18.—AGRICULTURAL LABOUR.—(*a*) Generally, there is no surplus of labour. It moves about for a few months then comes back to its original place. Our impression is that Indian labour is sufficiently mobile, unless there are other difficulties such as housing, malaria and harsh treatment. Wages alone ought to attract labour. So far as it is known, with the exception of certain tracts of the Central Provinces, not much fallow area is available for cultivation. There is some land available in hilly and jungly tracts, but owing to communication difficulties it is doubtful if outsiders will go and occupy such areas. Such areas should be freely leased out to emigrants in blocks of 10 acres with Government financial aid and fixity of tenure We are against large farms which are not common in India where cultivation is not carried on primarily for commercial purposes.

(*b*) Shortage of labour is due to- -

(1) epidemics to which hundreds of thousands fall a prey, (2) weak physique due to malnutrition, (3) diversion to mill areas and other industries which can provide them with better wages and work for the whole year, (4) migration of labour to other Provinces.

This state of affairs cannot be remedied without making agriculture a paying concern and without introducing subsidiary industries. If agriculturists could pay better wages labourers would flock to rural areas as they would prefer their homes to dirty slums in which they have to reside in mill areas. Preventable diseases, such as malaria, cholera, victimise a large number of labourers. If Government were to pay a little attention towards sanitation and medical relief, the population might double itself in twenty years

(*c*) Areas not at present under cultivation should be leased out rent free at least for ten years and afterwards rents on a sliding scale should be charged. The Government should never take as rent more than 1/10th of the gross profits; this should be the highest standard. Such profits would not be arrived at without consulting local bodies such as village panchayats, co-operative societies and district boards The demands made are modest ones when we consider that in the majority of countries of the continent, lands are held free for generations when they are newly brought under cultivation. The State is not getting any profits from fallow lands and consequently it should welcome any such move as might give it some return after a few years. The Governments of other countries encourage agriculture because they cannot grow sufficient food in their own countries. But in India it is neglected as it is never treated as an industry though the food problem in India is as acute as in any other country.

The question of moving labour from one place to another is not a sound one. If Government seriously takes up the question of agricultural improvements and cottage industries, it will mean employment for them for the whole year On the contrary, if such labour is moved from its original place to some other place, it may act as the greatest obstacle in the progress of agricultural development of the country Devoting too much attention to more paying commercial crops such as tea, jute, coffee, etc., will not be an unmixed good. Food crops should receive sufficient attention before other kinds of crops are introduced Without wholesale economic rehabilitation in rural areas, it is well nigh impossible to introduce other kinds of crops. I do not mean to say that commercial crops should be ignored. It is a matter of common knowledge that the introduction of machinery itself requires at least as much labour as is required for doing the same work by manual labour if not more.

MR. K. P PANDE-

Introduction of labour saving machines will mean greater profits and consequently greater capital for investment in other forms of industries.

It will be, therefore, a mistake to make labour move from one Province to another when there is a probability that in a few years the area so denuded of labour may require it for itself.

QUESTION 19.—FORESTS.—(*a*) and (*b*) No; we do not consider that full use of the forest lands for agricultural purposes is at present made. It is very difficult to find out what is meant by preservation of forest areas. More grazing facilities can be given. It would be better if the Forest Department should take up the question of improving the quality of forest grass and of growing new fodder crops. Forest areas should also be leased out for cultivation, cattle-breeding and dairying purposes wherever possible. Construction of forest roads to facilitate communication should be started They should supply seeds of superior kinds of grasses. The present hap-hazard system of growing fodder should be stopped and the work of growing better fodder crops on systematic lines should be undertaken.

(*c*) Soil erosion due to deterioration of forests is not marked in the Central Provinces at least and there is sufficient rainfall here.

(*d*) There appears to be no need for further afforestation at present

QUESTION 20.—MARKETING.—(*a*) Agriculturists should be given full facilities for selling their produce in markets A sufficient number of roads should be provided in rural areas. Light railways should be constructed along with roads District Councils should be encouraged to take up construction of such railways Middlemen should be eliminated as far as practicable Co-operative purchase and sale societies should be started in grain markets. It is necessary to take more effective steps to place at the disposal of cultivators, merchants and traders information as to market conditions, crop returns, complaints as to Indian produce and agricultural and marketing news in general.

QUESTION 22.—CO-OPERATION.—(*a*) The following steps should be taken to encourage the growth of the co-operative movement —

(i) The Government should help the movement by maintaining a qualified and adequate staff. (2) The Trust Act should be amended to the effect that trust money may be deposited in the co-operative banks (3) District Councils and Municipal Committee should be allowed to deposit their surplus funds, etc., in the Central Banks. (4) State aid should be given to land mortgage banks and housing societies. (5) Money should be advanced to non-official organisations for propaganda work.

(ii) Local bodies should be allowed to keep their money in the Central Banks. (2) They should appoint organisers and give them training in co-operative principles.

(*b*) (i) Credit societies require more education.

(ii) Establishment of purchase societies is very necessary In order to eliminate risks we would suggest that before placing an order indents may be invited

(iii) Forming of societies for the sale of produce or stock is necessary. Such an experiment is being tried in Berar.

(iv) Societies formed for effecting improvements should be advanced money at very low rates of interest The number of instalments should also be more liberal.

(v) Voluntary consolidation of holdings is not likely to succeed.

(vi) Agricultural machinery of crude and simple types can be co-operatively used. The difficulty is that machines cannot be easily repaired in villages

(vii) Societies for joint farming have not been established so far though the experiment is worth trying.

(viii) Cattle-breeding societies have proved a failure in the Central Provinces, but the experiment may be tried again. Government should supply breeding bulls free of charge and forest areas should be freely opened for grazing. Veterinary Assistants should be asked to supervise the general health of the herds periodically. Slaughter of milch cattle and other agricultural cattle should be stopped. Societies for fighting diseases should also be established.

MR K. P. PANDE.

(c) To work co-operative schemes for joint improvement legislation will certainly be necessary. There are people everywhere who are the worst enemies of all kinds of improvements howsoever important and beneficial they may be. We do not mean to say that such men should be compelled to become members of the co-operative societies but we should certainly insist on compelling them to effect improvements otherwise

(d) Societies have not done as much good as was expected of them, the main reasons being :—

(1) Agriculture is not a sufficiently paying concern. Practically no margin is left after meeting expenses of the year. (2) The rate of interest is high. (3) Absence of facilities for improving cultivation. (4)The land revenue policy of Government which by one settlement operation takes away what cultivators have achieved

QUESTION 23.—GENERAL EDUCATION—(a) In view of agricultural education having come under the control of the University, it is likely that there would be a separate course prescribed in agriculture. It should be an optional subject and it should generally concern itself not so much with field work as with farm economics including the budget of agriculturists Up to this time unfortunately farm economics has not received any attention, but in view of the newly created interest in agriculture this branch of economics cannot be neglected any longer.

(b) Rural education should be in conformity with the needs of agriculturists It has neglected agriculture so far with the result that boys do not pick up anything of agriculture in schools As the majority of boys do not go to the middle schools, it is absolutely necessary that they should be given training in agriculture in primary schools

This teaching should be practical in nature and should not be bookish.

Compulsory education has not been introduced in Jubbulpore district It has been introduced in some districts of the Central Provinces recently. It would be, therefore, premature to express any opinion about it Boys of tender age who are quite unsuitable for purposes of agriculture attend classes but when they grow up, they go to the plough and help their parents in carrying field operations. The shortage of labour and the grinding poverty of their parents deter them from prosecuting their studies further.

QUESTION 24 —ATTRACTING CAPITAL —(a) Unless agriculture becomes paying, capitalists are not likely to take to agriculture for cultivation purposes. The present tendency is that land is passing away from the hands of hereditary agriculturists to moneylenders who generally retain such villages as an outlet for investing their money and grain at high rates of interest which they can charge and realise because they are the owners of villages

(b) The settlement policy of Government is tending to discourage owners of agricultural land from carrying out improvements. The land revenue policy of Government which has been studiously and religiously excluded from the terms of reference of the Commission is primarily responsible for the poor state of agriculturists.

QUESTION 25—WELFARE OF RURAL POPULATION—Indians by temperament are not such dirty people as they are represented to be Their religious ceremonies, personal hygiene as is enjoined by their religious books, religious festivals and worship, clearing of villages when epidemics break out, the sweeping and whitewashing of every nook and corner of the house, the application of cowdung to the floor and the planting of various shrubs in the courtyard and other places are important factors which go a great deal towards keeping the villages clean.

Unless the Government gives them more money, they cannot do anything more. Medical relief, sanitation of villages and communications deserve the attention of all well-wishers of agricultural classes

Data for farm economics should be collected Such enquiry should be conducted not by the executive officers of the land but by professors and students of the University. It is a new science in India and consequently collection of data would take a long time before any tangible results can be obtained. Retired servants of the Co-operative, Agricultural and Land Records

Departments should be encouraged to take up this work. The scope and methods of such enquiries would differ from tract to tract. No hard and fast rules should be laid down in the initial stages. For reasons best known to Government, they have all along avoided an enquiry into the economic well-being of the people The non-official opinion is diametrically opposed to the official view They think that there is nothing economically wrong.

We have been closely connected with the co-operative movement and we find that, on an average, debt per head has been increasing from year to year. Our own impression is that this increase in debt is not due to their economic improvements

QUESTION 26 —STATISTICS —The work of ascertaining areas under cultivation and crops is already done by village *patwaris*. The substitution of any other agency would be rather expensive The work of estimating the yield of agricultural produce should never be done by the executive officers who in the majority of cases have no knowledge of agricultural matters. They do not make sufficient margin for losses in harvesting, gleaning, threshing, winnowing, etc. Estimates by Government are considerably higher than those of private persons. The present method of taking only 1/10th of an acre for crop experiments deserves to be abolished and deserves to be replaced by some other more reliable method. The work of arranging and publishing agricultural statistics should be done by the Department of Agriculture

The science of agricultural statistics is also a new one. Some persons should be deputed to study the American system of statistics.

Oral Evidence.

33185. *The Chairman:* Mr Pande, you wish to be examined on the note provided by the Tahsil Agricultural Association of Sehora?—Yes

33186 Would you like to make any statement in amplification of your note, or may I ask you some questions?—You may ask me questions, I may have to say something about co-operation, but I will do that later on.

33187. Are you a cultivator?—Yes

33188. Would you tell us a little about your holding, how big is it?—The area that I cultivate is about 1,000 acres

33189 Do you cultivate that 1,000 acres by hired labour?—Yes.

33190 Do you pay that labour in cash or in kind?—Both.

33191 Do you pay the same labourer partly in cash and partly in kind?—Yes; in that way the labourers dictate their own terms

33192. Then apart from that 1,000 acres, what land do you own?—I also own 9,000 acres

33193. That is 10,000 acres altogether?—Yes.

33194. Do you own the 9,000 acres in malguzari right?—Yes.

33195. Is the other 1,000 acres home-farm?—Yes. The whole area of the home-farm is 1,500 acres, but I cultivate only 1,000 acres.

33196. Of this whole area of 10,000 acres, how much, if any, is irrigated?—There is no irrigation in my part of the Province.

33197. No well irrigation?—There is well irrigation, but it is negligible.

33198. But still, you know, small experiments are important?—I have made experiments myself.

33199. And what is the result?—The result is satisfactory, but it is impossible to carry it on on a large scale.

33200. Why?—Firstly, the nature of the soil is such that it cannot stand irrigation.

33201. Does it become saline?—Yes; if you take a village of 500 acres, there may be 10, 20 or 50 acres at most that can stand irrigation.

33202. The rest goes salt?—Yes, and the soil is such that huge cracks appear.

33203. Is it the black cotton soil?—It is not exactly cotton soil, but it is black soil.

33204. Is there any clay in it?—There is.

33205. In patches?—Yes, in a village we have a number of soils; part is of one kind and part of another.

33206. So that it is only a small part of the area that is capable of being irrigated?—Yes.

33207. What are your crops on your home-farm?—Wheat, gram and paddy are the three main crops.

33208. Is that dry or irrigated paddy?—Naturally irrigated paddy.

33209. You do irrigate the paddy?—No, it is not irrigated; the system is that we have *bunds* and the land is water-logged

33210. Do you grow any cotton?—No.

33211. What varieties of wheat are you growing?—No. 88, No. 90 and other improved varieties.

33212 Are they recommended by the Agricultural Department?—Yes.

33213. Are you satisfied with them?—Yes.

33214 What gram do you grow?—I use the *deshi* or local variety.

33215. Do you think the local *deshi* gram seed is capable of improvement?—Everything is capable of improvement.

33216. That is a very safe answer What is the average outturn of wheat in the average year?—It is about four times the seed rate.

33217. Do you manure at all?—Manuring cannot be done on a large scale; whatever manure we have we use for paddy.

33218. Are you convinced that it would not pay to apply artificial manures?—No, it will not pay.

33219. You are satisfied of that?—Yes.

33220. How do you know?—The difficulty about artificial manure is that their prices are rather high, and if I use manure costing about Rs. 5 per acre, I must be satisfied that at any rate I shall get Rs. 6 in extra crop, but it does not come up to that; that is one difficulty.

33221. Will you tell me upon what experiments you found your views? Have you tried artificial manures?—Yes, I tried them, I think it was in 1920 and 1921.

33222 Was 1920 a very good or a very bad year?—Prices were high.

33223. What about crops?—I found I did not get as much crop as I ought to have

33224. But was not 1920 a very dry year?—I cannot remember. I think it was a dry year.

33225. It was a year of crop failure, was it not?—I think there were three successive failures of crops in 1920, 1921 and 1922.

So that you made an experiment in what, as far as you can remember, was a year of crop failure, and upon that you formed the view that artificial manures would not pay.

33226. *Prof Gangulee:* What was the crop on which you used the artificial manure?—I think I used it on wheat, we sow wheat and gram together.

33227. *The Chairman.* Now tell us about any other difficulty?—Another difficulty is that in order to use these manures you must irrigate the land; but we are not in a position to do that.

33228. Have you ever tried cowdung?—We try that every year.

33229. On wheat land?—Not on wheat, but on paddy.

33230. Have you ever tried it on wheat land?—No, we have not a sufficient supply.

33231. You need the whole of it for your rice?—Yes, the whole of it is used on paddy.

33232. How many pairs of bullocks do you keep?—I keep about 80 pairs of bullocks.

33233. Have you any suggestions to make to the Commission as to how the difficulty of keeping these bullocks in condition in a season of fodder shortage could be achieved?—There is fodder shortage; there is no doubt about it.

33234. Have you made experiments?—Yes.

33235. What did you try?—I tried *juar*, but the difficulty is that it could not withstand the rainfall. The rainfall of my district is something like 60 inches and every third or fourth year it may even go to 70 inches; moreover the winter temperature is so low that *juar* cannot thrive.

33236. Have you considered at all the possibility of growing Guinea grass or lucerne?—I grew lucerne once; but I cannot say whether it was a success or not. It is doubtful whether we can use it for draught cattle; it may be all right for milch cows but for draught cattle it does not pay.

33237 Do you keep accurate and complete costings of your farming operations, detailed accounts showing the cost of production on a given unit and the return?—Yes, I do.

33238 *Prof. Gangulee*. What is the cost of cultivation per acre of wheat?—It varies in different tracts; if you are situated near a railway station or a big town, for example, it may cost you Rs 20; but if you are far away from a railway station it may cost you less

33239. What is the cost of cultivation per acre on your own farm?—Rs. 10.

33240 *The Chairman:* Do you lend money to the villagers in your malguzari areas? -Yes.

33241 At what rate?—It varies from 12 to 24 per cent per annum.

33242. It has occasionally been suggested before the Commission that there should be a statutory limitation of the rate of interest. Do you agree with that view?—Yes, provided the State were to come forward and find the money for the cultivators

33243 Are you lending any seed at all to your cultivators?—Yes

33244. On what terms?—At 25 per cent per annum.

33245 In kind?—Yes, in kind

33246. *Dr. Hyder*. Not on *sawai* or *dedhi*?—*Sawai* means 25 per cent. You have got also 50 per cent in districts like Mandla. I have got a scheme of my own which will reduce the rate

33247 Have you included that scheme here in your note?—No.

33248 *The Chairman* On page 529 you suggest: "Agriculture can be made attractive to middle-class youths by introducing more paying crops, by advancing them capital at a very low rate of interest" That would be at the expense of the general tax-payer, would it not?—The thing is this if you take the entire revenue of the Central Provinces it comes to something more than 5 crores and out of this 2½ crores is derived from land revenue alone; so it cannot be said that it is taxing the general tax-payer.

33249 So your view is, I suppose, that you are taxing other agriculturists to provide cheap rate of interest for this class?—The present position is that agriculturists are taxed for the benefit of other people.

33250. You say: "Adult education in rural tracts can be popularised by opening night schools." Is that view founded on any definite experience of yours?—I have tried some experiments and I have succeeded also. I am the Chairman of the Sehora Central Bank and there the experiment was tried.

33251 Would you tell us a little more about it?—It had to be given up because the Bank had not sufficient funds.

33252. How long was the experiment carried on?—For three months.

33253 You think you can come to any very clear conclusions about a scheme of adult education in three months?—I say that people wanted it but the difficulty was want of funds.

33254. How many people attended in the beginning of the three months?—Thirty.

33255. How many were there at the end of the three months?—Not more than five. The whole thing depends upon the amount of pressure which the malguzar can exercise on the people.

33256. On page 530, in answer to Question 4, you say: "Before the introduction of the Reforms scheme, the Agricultural and Veterinary Services were not in touch with the rural population". Surely the Veterinary Services in the districts have been in the hands of the District Boards for a long time, have they not?—We have got the dispensary; but the veterinary officers are under the Central Government.

33257. The dispensary is in the hands of the Local Boards?—Yes, but we have not got any control over the Veterinary Assistant.

33258. Are you not responsible at all for the way in which the business of the dispensary is carried on?—We are responsible only for payment; we cannot lay down principles for carrying on the dispensaries. So the best thing is that the services of the Veterinary Assistants should be transferred to the local bodies..

33259. Is it your view that the local authority would be prepared to take responsibility for the administration and work of the dispensary?—Yes.

33260. You would like to see that done?—Yes, provided also that the Government gives the funds which it is already spending on it.

33261. *Prof. Gangulee* Are you a member of the District Council?—I am the Vice-Chairman of the District Council and Chairman of my Local Board.

33262. *The Chairman:* In the matter of finance, in answer to our Question 5, you say: "There should be no delay in advancing *taccavi* and land improvement loans". Is it your view that there is undue delay in advancing these *taccavi* loans?—Yes.

33263. Is there more delay than is required for the officer who is responsible to make a complete enquiry into the justification for the application?—That is a matter for the authorities; I cannot say.

33264. You have to consider this question in relation to the responsibility of the officer who is to decide as to whether the public money is to be advanced to an applicant or not. It would not do to lend Government money without proper enquiry, would it?—But the procedure can be simplified

33265. You think it can?—Yes

33266. Who do you suggest should be responsible? Have you thought out any scheme?—The best thing is that these loans should be advanced through co-operative societies

33267. Have you got any co-operative society on your 9,000 acres?—Yes.

33268. How many?—I have to manage over 13 villages and in 7 I have got co-operative societies.

33269. Are they working?—They are working well.

33270. Are they utilising all the available money for loans?—They can get money from the Central Bank.

33271. Then why do you suggest that *taccavi* should be made available?—The thing is this: they get money at 12 per cent from the Co-operative Central Bank, while from the State they can get it at about 7 or 8 per cent; this is cheaper. Moreover all cultivators are not members of the societies.

33272 Do you believe in the co-operative movement?—I do.

33273. You think it will be a good thing for the co-operative movement if *taccavi* loans were made readily attainable and were granted at lower rates of interest?—Yes.

33274. You think that will be a good thing for the co-operative movement?—Yes.

33275. Your suggestion is that the primary credit societies should be financed by *taccavi* loans and not from the Central Bank?—No, that is not my suggestion.

33276. Then how do you propose to do it?—A cultivator who is not a member of the co-operative society can get a loan from the Government and I suggest that such a loan should be advanced through the co-operative society.

33277. To non-members?—Yes.

33278. Would you make the co-operative societies the judges of whether an application was justifiable or not?—Yes.

33279. But the co-operative societies would have no responsibility for repaying Government, would they?—We are prepared to have that responsibility provided we get some commission on the whole thing and it can be done like this: supposing the State advances to them at Rs. 7-12-0 per cent, if co-operative societies guarantee payment then Government may advance the money to the societies at 6 per cent.

33280. At what rate does the primary society in your district borrow from the Central Bank?—12 per cent.

33281. At what rate do you suggest the primary society should be lent money as *taccavi* loan?—That is not my position; I do not want that it should be advanced from the State entirely.

33282. If *taccavi* loans were available to primary societies at rates of interest lower than the primary societies can borrow from the Central Bank, would it be good for the business of the Central Bank?—If they get loans at about 7 per cent then they will have to enhance the rate when they advance to individual members; secondly, State aid to that extent is not desirable; thirdly, I doubt whether the State will be in a position to help to such an extent.

33283. Have you studied the working of the Usurious Loans Act in this Province closely?—It is not in force in this Province; I think it is only in force in the Punjab.

33284. Only in the Punjab?—I think so.

33285. Is it not an All-India Act?—At any rate, I am not aware of its existence so far as this Province is concerned.

33286. The position is that it is an All-India Act and it is open to Provincial Governments to put it into force or not to put it into force. It is in force in Berar but not in the other half of the Province?—In Berar, they have the *damdopat* system.

33287. But the *damdopat* system is not the same as the Usurious Loans Act?—In Berar, the *damdopat* system applies to Hindus.

33288. That has nothing to do with the Usurious Loans Act?—*Damdopat* serves the same purpose.

33289. "Voluntary consolidation of holdings has proved to be a failure", you say. What attempts on a voluntary basis have been made in this Province?—It was attempted in Chhattisgarh Division, but only in a very limited manner.

33290. Are you quite sure that the voluntary method has been fully tried?—I think it is bound to fail.

33291. *Mr. Calvert:* You saw it in the Punjab, did you not?—Yes.

33292. It did not fail there?—No, because it was tried in less than 300 villages, and that touches not even the fringe of the problem. And again the position in the Punjab is entirely different from the position in these parts. Here we have got the *bunding* system, whereas in the Punjab you have got one plain surface and it is easy to adjust one plot with another. That sort of thing cannot be done here.

33293. *Sir Henry Lawrance:* Your soil varies here, does it?—Yes.

33294. *The Chairman:* On page 531 you say, "It is very doubtful that the existing seed of the newly introduced varieties is likely to continue its high yielding nature"? Is that because of a probable deterioration in the varieties or because of the effect on the soil of better varieties season by season?—I think it is due to the soil.

33295. You give on page 532, as one of the reasons for the progressive shortage of labour, the rise in prices? How does the rise in price bring about a shortage of labour? That accounts for the labour becoming more dear, I suppose?—Yes.

33296. You say "diversion of agricultural labour to other industries which came into existence during the War"? What industries are you thinking of?—The cement factories at Katni in the Jubbulpore district; also the development of Tata's works.

33297. Are those cement manufactories still in being?—Yes, there are three factories.

33298. *Prof. Gangulee:* How many labourers do they employ?—I cannot say definitely, but I think they must be employing about 6,000 people.

33299. *The Chairman:* Have you any suggestions to make as to how these difficulties might be overcome?—I have suggested the introduction of subsidiary cottage industries.

33300. Would you like to see local authorities purchasing steam tackle in order to undertake ploughing on a contract basis?—If you mean District Councils, my answer is in the affirmative

33301. You suggest that the department should do it?—Yes, I think the Department of Agriculture should do it, it is impossible for the ordinary people to take it up.

33302. Why?—It would mean so much money which they do not possess and it is doubtful whether the thing would succeed.

33303. You are not very hopeful about it?—Not much.

And very wisely you suggest that the department, with which you have no connection, should take the risk.

33304 Have you any experience of the method of preserving fodder known as silage?—Yes.

33305. Do you practise that?—Yes

33306 For how long have you practised it?—For the last three years.

33307. Do you find it a success?—Yes

33308 And you believe in it?—Yes

33309. Are you making your silage in pits below the ground?—Yes.

33310. Are you having any difficulty at all?—Up to this time I have not experienced much difficulty, except that I cannot do it on a large scale

33311 Why not?—Because I have not got sufficient fodder.

33312. Have you had any disappointments? Has any of it gone bad?—Only a small portion of it.

33313. Just on the top and the sides?—It is generally lower down.

33314 You find your animals eat it readily?—Yes, I use it for milch cattle only

33315. Do your villagers take any interest in it?—No

33316 Have you attempted to show it to them?—It is done in the village itself, but they do not maintain many milch cattle as a matter of fact

33317. I see you suggest that *sann* hemp should be grown under irrigation for green fodder? Do you think that is the best green fodder that you can grow?—I have said that it would serve two purposes; firstly, for green fodder, and secondly, for manure.

33318. I observed that; but do you think it is a good green fodder?—I cannot say anything about that.

33319. I just want to be certain as to what you mean when you say that the demands that you are making on Government funds are modest?—Of course modesty is a relative term; they are modest when we consider the demands in the majority of the countries of the Continent?

33320. Which Continent do you refer to?—I think the European Continent.

33321. Where do you market your wheat?—In the local market.

33322. Are you satisfied with the prices you get?—Not at all.

33323. Could you not market it to a merchant direct?—I have not yet been able to get such a merchant.

33324. Do you get the ordinary rates for wheat grown on your own farm?—I get a slightly better price.

33325. Why?—Because I produce purer stuff. What the merchants do is this: they take wheat of all kinds and mix them with mine and produce standard quality. In Bombay there are different qualities, for example, 70 per cent pure and 30 per cent dirty. If they want to produce another combination they just mix mine and bring it to the required standard.

33326. You suggested at the commencement of your oral evidence that there was something that you wished to add to that statement. Would you let us hear what it may be?—I wanted to mention two things in this connection: firstly, my seed scheme and secondly, the system of tenancy which we have in the Central Provinces The tenure of land is such that there is absolutely no value for the land.

33327. You know the subject of tenancy is not within the terms of our reference. We are quite prepared to hear the effect that present conditions have on your cultivation if you wish to tell us, but we are not prepared to hear any proposals for a change. Do I make myself clear?—Our difficulty is that the two questions are so mixed up together that you cannot examine the former without examining the latter also.

33328. Proceed with your statement and I will stop you if necessary?—The difficulty with regard to the system of tenure is that the co-operative societies have absolutely no assets. Members hold their land on occupancy right only and they have consequently nothing to mortgage. Then after taking large loans they apply to the law courts and get themselves declared insolvent, with the result that the money is lost to the Central Bank and to the society. The remaining members are required to pay up for one man's dishonesty.

33329. Before you go any further I want to ask you a question on that. You have several primary societies on your own estates?—Seven societies.

33330 How many of them are really being managed efficiently by their own members? Are they in fact managed by committees of the primary society or are they really there simply as links between the individual borrower and the Central Bank?—Out of these seven societies I think only one can exist without any aid from outside.

33331. Take that society which is the best you have. Does the committee make a close scrutiny of the applications for loans that come in to the committee from its members?—They do.

33332 So that they ought to know which of their members, if any, are deserving of a loan?—Quite so but you cannot know when the man will become dishonest. He might be honest to-day but what is there to prevent him from becoming dishonest to-morrow?

33333. Do not let us take too gloomy a view. Probably it would be all right if you did not take such a pessimistic view as you have taken. You do not think that the co-operative society through its committee is capable of judging as to whether its members ought to be given loans or ought not to be given loans?—They understand their interests best, but the difficulty is that they would not know what the man might do afterwards.

33334. In all businesses you expect to meet a certain proportion of dishonest people and you must expect to be faced with a certain number of disappointments and bad debts. Dou you not think that the primary society, if properly managed, is capable of protecting itself against the ordinary risks of business in those respects?—It is well qualified to protect itself, but even in the best joint stock banks you will find that fraudulent transactions take place.

33335. You say that the other societies are not capable of managing their own affairs?—Yes.

33336. Who examines the applications that come in from their members for loans?—What I say is that they cannot exist without outside help.

33337. Who examines the applications?—The applications are examined by the members of the societies themselves, but the Central Bank lends them a clerk who writes out their accounts, dratts their applications, and does other things.

33338. Do you think that the principle of unlimited liability is not capable of stimulating the members into a sufficiently wary frame of mind to look after themselves?—It does. In the beginning, before the principle of joint responsibility was enforced, they were reckless, but now they are cautious.

33339. To come back to your point, you think that it is impossible to conduct credit societies unless the members have land which they can mortgage?—That is not my intention. In order to put the whole thing on a sound footing the nature of tenancy should be changed. In this connection, an amendment of the Insolvency Act is also necessary; that is my point.

33340. Would you tell us what you wish to be done in the way of amendment?—That a man will not be allowed to become insolvent as long as he has property; that he will not be allowed to surrender his holdings to the malguzar as long as he has got debts owing to a co-operative society.

33341. You want to put the co-operative society in front of the *sowcar*?—Yes, I am expecting to get the same right which the Government has over them.

33342. Have you got anything else to say?—About the staff of the Co-operative Department, the position in the Central Provinces is that no Registrar has held office for more than two years. They have been changing, and so they have not been able to put in as much work as they could have if they had been fixed to the department. They come to the department, work there for a couple of years, and then go to some other department.

33343. On page 538 you say: "Indians by temperament are not such dirty people as they are represented to be". Who has been representing them to be dirty?—That is the general impression.

33344 I should have thought that, in some respects, the houses of the cultivators in the average village are extraordinarily clean; and that it is just the absence of knowledge as to facts of infection which, in certain essential matters, leads them to practices which are responsible for the spread of epidemic diseases?—They are quite careful about infectious diseases.

33345. You think they are?—Yes. If a man is suffering from small-pox, nobody is allowed to enter the hut of that man. They keep fire burning throughout, and when the man has recovered they clean the house again. In cases of epidemics like plague, they at once leave their huts.

33346. *Prof. Gangulee* What about the surroundings of the houses?—They are dirty.

33347. *The Chairman*. Take the case of cholera: where is the linen soiled by a cholera patient usually washed?—It is washed in the village tank.

33348. On page 539 you say: "we find that, on an average, debt per head has been increasing from year to year" Could we have the facts on which you base that view?—The fact is that if you take the Co-operative Report of this Province you will find that the average debt per head has been increased in almost all the cases.

33349. Have you made any definite survey of any particular district? These impressions are very misleading?—If you take the sums which are under award in liquidation cases, then you will find that the amount has been increasing from year to year.

33350. You think that necessarily means that the total debt over the whole country is increasing?—That is one aspect. If you take the average debt per head, you will find that that also has been increasing.

33351. How do you know what the average debt is?—I know because I am connected with the bank.

33352. *Prof. Gangulee*: You have not undertaken any enquiry on which you base this statement?—I base it on whatever inquiry I have made. As a matter of fact, no regular enquiry has been made by Government itself.

33353. *The Chairman:* I want to be sure that I have not misunderstood you in this matter of *taccavi* loans in relation to co-operative societies. Was it your suggestion that primary societies should administer these *taccavi* loans?—Not primary societies; Central Banks. It would be too much for the primary society to take it up. The Central Bank can take the loan from Government; and guarantee the rate of interest, and its repayment.

33354. So that there will be no competition between *taccavi* loans and Central Banks?—No I do not want competition.

33355. *Sir James MacKenna:* Are you the owner of the estates you were talking about?—Yes. I am the legal owner.

33356. Have you had much assistance from the Agricultural Department?—Yes, they have given me much assistance.

33357. They have given you considerable assistance?—Yes, that is due to the fact that we have been asking the help of the department from the very beginning.

33358. Are you a member of the Legislative Council now?—Yes.

33359. Have you been a member since the beginning?—Yes.

33360. Do you remember the year in which there was a cut of Rs. 2 lakhs in the agricultural budget?—Yes.

33361. Were you in favour of that cut?—Yes.

33362. Why?—Because Government had produced that year the Report of the Co-operation Committee, and that report was so reactionary that we were bound to vote against it.

33363. What do you mean by co-operation? Political co-operation?—I am using the expression strictly in the co-operative sense. The Local Government had appointed a committee to examine the working of the Co-operative Department.

33364. And because that did not satisfy you, you cut the agricultural budget?—The idea was to cut the Co-operative Department budget, not the agricultural budget.

33365. But the axe fell on the wrong branch?—That may be.

33366. *Prof. Gangulee.* What do you mean by reactionary?—It was a reactionary report. The present position in the Province is that when Central Banks have their own Chairmen, the district officials have got nothing to do with them. The report recommended that the Registrar, whenever he finds that suitable non-officials are not coming forward, should be given the power to appoint anybody as Chairman of any Central Bank. Then, it gave power to the Registrar to turn out any member of a co-operative society or any director from any bank. These were the proposals which we were bound to resent.

33367. You did not approve of them?—No.

33368. *Sir James MacKenna.* What reason have you for saying on page 530 that: "Before the introduction of the Reforms scheme, the Agricultural and Veterinary Services were not in touch with the rural population but now it has changed and therefore the work of these services is being more appreciated"?—The view current up to 1920 was that the department was mainly concerned in carrying out research work at headquarters. But in 1921, when the non-official side said that it was desirable that they should familiarise the people with their researches, they took to field work also.

33369. They did not do it before 1920?—Not in the way they have been doing since then, and public criticism is responsible for it.

33370. You think that it justifies your making that statement?—Yes.

33371. Are you not aware of the introduction of *roseum* cotton and the transplantation of paddy in Chhattisgarh, before the Reforms? Can you quote anything that has been done since the Reforms?—As a matter of fact, this transplantation was not a new thing propagated by the department; the people knew about it, and it was done before that in the United Provinces. As regards *roseum* cotton, I think that the department has concentrated too much on *roseum* cotton. The position here is that there are five Divisions in the Central Provinces; Berar and Nagpur are cotton tracts, Chhattisgarh is the paddy tract and the Jubbulpore and Nerbudda Divisions are wheat tracts. They might have been doing a lot already in one Division, but the other Divisions were suffering.

33372. Are they not doing anything in the wheat tract?—Now they are doing much.

33373. They did not do a great deal before 1920?—Not much.

33374. *Prof. Gangulee:* Who evolved the A-115 type of wheat? Of whose work is it the result?—I do not know. What I wanted to say was that the people should be made familiar with the researches of the department.

33375. Have any demonstration farms been started since the Reforms?—They existed even in 1920.

33376. Do you know of any farm that has been started since the Reforms?—There are two farms in my own tahsil.

33377. Started since 1920?—Yes.

33378 You show a great deal of interest in the development of agriculture; are you familiar with the practice in the Agricultural Institute in Nagpur or in various Government farms?—I have tried to keep myself in touch with them.

33379. In what way have you kept in touch?—I am a member of the Provincial Board of Agriculture.

33380. Do you attend the Board meetings regularly?—Yes, regularly.

33381 When did you attend last? I think the last meeting was held in September.

33382 Did you at any time place before them the views that you have placed before us?—Yes, I have moved resolutions, I pressed for these things; I have pressed for the contract ploughing system, I have pressed for seed supply business

33383. You suggest various legislative measures for the benefit of agriculturists. Did you as a member of the Legislative Council take any steps in that direction?—As far as the Legislative Council is concerned, it has been working in a very haphazard manner

33384 What do you mean by that? As a matter of fact, in the last three years nothing has been done, during 1920, 1921 and 1923 when the Legislative Council were working there were two Ministers, but after the Swarajists entered the Council the Ministers disappeared and along with the Ministers the Council also

33385. But that should not interfere with your introducing any beneficial measures?—We could not do it, because the Government said that in the absence of Ministers they were not prepared to lay down any new policy.

33386 On page 530 you say that since the Reforms the work of these services is being more appreciated?—Yes.

33387 And on page 529 you say that the people have not much faith in the activities of the Agricultural Department?—Yes

33388 Could you explain that a little further?—The position has considerably changed since 1920 but a great deal of work is still to be done.

33389 That we all realise, but you say the people have not much faith in the activities of the department. You yourself have introduced *roseum* cotton in your tahsil?—Yes

33390. We have had evidence to the effect that cultivators are growing A-115 wheat and better implements have been introduced in various tracts?—Yes.

33391 Then why do you say the people have not much faith in the Agricultural Department?—You are putting too literal an interpretation on my words

33392 So that you do not mean what you say here?—I do not mean to say that I condemn the department altogether.

33393 Then I will leave it at that Is there a Federation of Co-operative Societies here?—Yes.

33394 Are you connected with it?—I am its Governor.

33395 How is that Federation working?—It did not put much work for the last two years, but now it is showing signs of life.

33396 Why did it not work during the last two years, and why is it showing signs of life now?—In 1921 the Governor of the Federation became a Minister of the Central Provinces Government. The gentleman who was then elected Governor in his place died within a month of his acceptance of office After that nobody came forward to accept the responsibility because the office was an honorary one and entailed a great deal of work. The present position is that I have taken up the work, but I have no money with which to carry on any work

33397. Did you say that that Federation is showing signs of life now?—Yes.

33398. Who gave life to the Federation?—The new Executive Council. A new Executive Council has been elected and I have been rendering some service in that direction.

33399. You have told us something about the primary society of which you have knowledge?—Yes.

33400. To what class does that particular society belong?—There are very few societies of "A" class; the majority of them are of "C" class.

33401. Does the society which you know belong to "C" class?—"C" and "D".

33402. Who does the auditing?—The Government Auditors.

33403. Are you satisfied with that arrangement?—Personlly I would suggest that more Auditors should be appointed, and that the Central Bank should not be asked to bear the expenses of the audit. What I suggest is that the Central Bank should confine its activities to education, training and propaganda.

33404. I understand you are also a member of the District Council?—I am Vice-Chairman of the District Council and Chairman of the Local Board.

33405. What are the chief interests of your Local Board?—We are concerned with roads, school buildings and pounds.

33406. Of the three things you have mentioned, roads, school buildings and pounds, which interests the Board as a corporate body most? Are you keen on better roads, better pounds, or better school buildings?—They care more for schools; they are not in a position to care for the roads because they have no money at their disposal

33407. What about the Veterinary Service?—They do not have full control over the Veterinary Service

33408. I think you are referring to *taccavi* loan when you say in your note that coercive processes are used to make recoveries?—Yes.

33409. What are the coercive processes to which you are referring?—You can attach a man's property and send him to prison at once.

33410. Is that what you mean?—Yes.

33411 On page 530 you refer to the Conciliation Board, what Board are you referring to?—These Boards were established once in the Central Provinces and they went from town to town, they sent for *sowcars* and moneylenders and got their debts compounded in many ways.

33412. Is that Board still functioning?—It functioned once.

33413. What has happened to it?—I cannot say; it may have been abolished.

33414. You are not in touch with it?—No; that was long ago; it was about fifteen years ago.

33415. On page 532 you make a statement which I do not quite follow: "Letters to all the Provincial Heads of the Agricultural Departments and to the Pusa Institute were sent by the Association but no one was able to give sound advice in this matter." Are you referring to a particular incident?—Yes.

33416 Would you explain what it is?—It was a problem like this: there being 60 inches of rainfall and about 40 degrees temperature in winter, the whole area being water-logged, they were asked what should be grown as fodder crop.

33417. *Mr. Calvert.* I gather you are a strong upholder of the independence of Central Banks?—Yes.

33418. And you resented the suggestion that the Registrar should have power to appoint a Chairman?—Yes.

33419. And you would not like the Collector to interfere with the working of the Central Banks?—No, I do not want him to interfere.

33420. You propose that *taccavi* should distributed through the Central Banks?—Yes.

33421. Would the Central Bank also be responsible for the collection of the *taccavi*?—Certainly.

33422. The Collector, as you know, has special powers for recovering *taccavi* loan?—Yes.

33423. But the Central Bank would not have those special powers?—Very well!

33424. How would you get over that difficulty?—It is not in every case that coercive processes are used.

33425. But part of the argument against the Government system of *taccavi* is that coercive processes are used?—Yes, but in the co-operative society minimum coercion would be used.

33426. But supposing the Central Bank could not collect certain *taccavi*?—Then the Central Bank would have to pay it out of its own funds.

33427. And bear the loss?—Yes

33428 The Central Bank would not resort to any special powers?—No.

33429. You would not mind the Central Bank incurring the loss on sums found to be irrecoverable through its ordinary powers?—Quite so, but the Central Bank at the same time would be making some profits, if they are advancing, say, at Rs. 7-12-0 per cent to an ordinary cultivator, the Government can very well advance money, say, at 6 per cent to the Central Bank which would offer them much better security. I would give the difference between the two rates to the Central Bank

33430. Under the Co-operative Societies Act Government dues due by societies may be recovered by a special procedure?- Yes

33431. Therefore it would be possible for the Central Bank to get this special procedure enforced to recover *taccavi* lent through it; would you not allow a Central Bank to use those powers?—No; as a matter of fact, such powers have not been much used in the Province

33432. But you have in the Province the procedure under the Public Demands Recovery Act?—Yes.

33433. That is frequently used?—Yes.

33434. But you would not use those powers to collect arrears of *taccavi*?—I would use those powers, when we are going to incur responsibility we should use such powers as we have under the Co-operative Societies Act already; it would be extremely unfair that we should be deprived of the powers which we already have under the Act

33435 So that you would use those special powers?—Yes.

33436 Which depend upon the Registrar or the Collector intervening?—Yes.

33437. Even though you do not like the Collector intervening in the affairs of the Central Banks, you would like him to intervene to collect the dues which you cannot collect?—The only thing is this: we require his help only when we have failed in all other ways The complaint against *taccavi* loans and the loans under the Government Land Improvement Acts is that in 1923-24 and 1924-25, when there was a financial deficit in the Province, Government issued instructions to the Revenue Officers to collect these loans, and in realising those loans the Government authorities became very strict. The result of all that is that nobody wants to take loans from the Government.

33438. In the recovery of arrears due to societies, do you not believe in strictness?—What do you mean by strictness?

33439. Do you not think a member of a primary society should be made to pay what he can pay?—I think they do as long as they can.

33440. Is that strictness in recovery a prime element in the success of all co-operative societies?—There is not much strictness, and then you cannot substitute coercion for co-operation.

33441. Just to clear that up: at first you give us the impression that the Central Bank should face loss rather than take coercive measures. What is the exact idea intended to be conveyed by the expression "coercive measure"? Do you mean those measures which we can already take under the Co-operative

Societies Act?—I was referring to the actual powers conferred by the Co-operative Societies Act to collect dues to the Government.

33442. When exactly would you stop incurring the loss and when would you begin to apply to the Collector for these coercive powers?—When we find that all our efforts have failed; it would be the last resort.

33443. The point is that your distribution of *taccavi* through the Central Banks would tend to involve you in interference from the Collector?—Why should he interfere; when it is required he should come forward and give it on the security of the Central Bank. Secondly, it saves the Collector also a great deal of bother: he has to hold an enquiry into the whole thing, as to whether the man is sound, whether he can pay, what is his paying capacity and so on He would be saved from that bother. When we are going to save him that bother, when we are giving very good security to Government, why should Government grudge advancing loans through the Central Banks?

33444 I suppose you know that even under the present system of *taccavi* being distributed through Collectors, considerable sums have to be remitted as irrecoverable?—Yes

33445. So that your Central Banks would suffer loss?—Why should we suffer loss?

33446 If the Collector cannot recover by special procedure, it is not likely that you would be able to recover without that special procedure?—Yes, but we should not suffer loss because we are taking the difference between the two rates

33447 *The Chairman* As profits for the Central Bank?—Yes

33448 *Mr Calvert* You would be prepared to regard that profit as covering your losses?—If things come to that, we are bound to suffer loss

33449 In discussing indebtedness you refer to previous loans which have not been cleared off for generations?—Yes.

33450 That is to say, there are people who are born in debt, live in debt and die in debt?—Yes

33451 Would you, in order to get rid of that, advocate a more free use of insolvency?—I would not object to them becoming insolvent

33452 You would not object to a resort to insolvency to get rid of inherited debt?—As a matter of fact the cultivator tries to pay as long as he can; he is not essentially dishonest, he becomes dishonest only when he finds that all other methods have failed

33453 He even goes on paying off debts which are really time-barred?—That he does

33454. Till the only resort is insolvency?—Yes, it is the last resource when the creditors begin to harass him

33455. But I gathered from your reply to the Chairman that you expressed a view rather opposed to the insolvency proceedings, I could not quite understand the point?—For that I must take you to Bombay where you opposed the suggestion that the Central Provinces had brought forward for amending the Insolvency Act The suggestion was thrown out at your instance and at the instance of Mr Madan Now I think you are in favour of it I will give you a concrete instance. There is a man at Hoshangabad who has got 3,000 acres of occupancy land and who has become insolvent. Now the position is that while the man is getting money from his tenants by sub-leasing his plots, he is not paying a single rupee to his creditors. I will give you another instance. The Piparia Central Bank is suffering from a loss of Rs. 40,000 which were advanced to persons who had occupancy rights but who have got themselves declared insolvent

33456. Cannot the rents be attached?—No; they pay rent so far as the Government land is concerned, Government has got the first preference over the land; land revenue must be paid.

33457. I still do not quite understand you; are you in favour of an extension of insolvency proceedings or a curtailment?—I should say that loans to the co-operative societies should come under exceptions, just as Government dues. That is my point. I would not allow the man to surrender his holding to the malguzar or dispose of it in any other way as long as there are debts against him

in favour of the co-operative society. The present position is, suppose I am a member of the co-operative society and I have taken a loan and get myself declared insolvent; you can attach my crop, but I do not cultivate the land myself and so you cannot attach my crop; I sub-lease my holdings. The second difficulty is that if he surrenders his holding to the malguzar, the latter gets the holding for nothing and does not pay anything to the co-operative society. The nature of the tenancy throughout the Central Provinces is like this and so long as the cultivator has got only occupancy rights he possesses no assets, and when he possesses no assets his credit ought to be *nil*.

33458. *Prof. Gangulee*. What are your suggestions?—Nobody can now get himself declared insolvent as long as he has not paid off Government loans; if the man has taken a Government loan, Government can at once take possession of his occupancy holding and auction it off; but that cannot be done in the case of the co-operative societies.

33459. *Mr. Calvert*: You want the loan to the co-operative society to be a first charge on his assets on a par with the land revenue and the rent?—Yes, you may give me the second place; I shall be quite content.

33460. Revenue first, then rent and then a loan due to the co-operative society?—Yes; I will be satisfied if I get that.

33461 That is the present Bombay Act?—Yes, I will be satisfied with it

33462. Apparently, people who breed bullocks now are able to get Rs. 150 for a pair, whereas formerly they only received Rs 60, has that encouraged bullock breeding at all?—So far as breeding farms are concerned, I think they are not paying. I maintain one myself which is certified by the department, but I find that it does not pay

33463. *Prof Gangulee* What breed do you have?—The Malvi breed.

33464. *Mr. Calvert*: Is there any very marked difference between the districts of Hoshangabad and your own in regard to fodder and pasture?—There is a great deal of difference, as much difference as there is between Nagpur and Chhattisgarh.

33465. Which is better situated as regards pasture and fodder?—I think Nagpur is better situated.

33466. As between Hoshangabad and Jubbulpore?—Jubbulpore is the worst because the system of cultivation there is entirely different from what prevails here in Hoshangabad. Here you do not have water-logged areas, whereas throughout the Jubbulpore district there is that system

33467. But comparing Jubbulpore and Hoshangabad, which has more pasture?—That I cannot say; but pasture is bound to be greater here because there is not so much rainfall here and it is free of water-logged areas Then again, this tract produces cotton and *juar* and they serve as fodder; these crops are not grown in Jubbulpore

33468 The District Agricultural Association of Hoshangabad say that the common village pastures are over-stocked and your Agricultural Association say that there is very little over-stocking of common pasture?—I think both of them are mistaken. What is meant by over-stocking? Do the Hoshangabad people mean to say that they have got more agricultural cattle than what are actually required for cultivation?

33469. *The Chairman* Is not the ordinary interpretation of the word over-stocking that there are more animals living on the land than the land is capable of feeding?—That may be; that is a matter for the Hoshangabad people to say.

33470. *Mr. Calvert*. In your district there is ample pasture for the cattle?—No.

33471. You say there is no over-stocking of common pasture, which means there is ample pasture for cattle?—By over-stocking what I meant was the maintaining of more cattle than were necessary for our agricultural purposes; we have used the word with that idea

33472. Have you or have you not, ample pasture for cattle?—We have not.

33473. Discussing labour, you refer to the weak physique due to malnutrition. Do you find that among the *atta*-eating people or the rice-eating people?—You will find that when you compare the people from the Punjab and the United Provinces with the people from the Central Provinces, and you will find a still

greater difference when you compare the people of Chhattisgarh with the people of the Jubbulpore Division. You will find that those people who come from the wheat-producing districts are generally more hardy.

33474. Is this malnutrition due to diet or due to poverty?—I think it is due to both.

33475. Actually the rice diet is more expensive than the wheat diet?—It may be; I cannot say anything about it.

33476 You seem to think that Government could bring about a doubling of the population in twenty years by paying more attention to sanitation Would you regard that as a good or as an evil?—If it is evil to have a family, then that is also an evil.

33477. Would you look upon doubling the population in twenty years as a thing to be desired?—I would, and if it does not double itself there must be something wrong somewhere in the system

33478. The reason why I ask you is that you are rather opposed to people earning higher wages by industries?—My position is not that; what I say is that the business of agriculture should be made so paying that they will be able to find work in their own villages

33479. You have studied the Punjab system of co-operation?—No; I had never been to the Punjab

33480. You suggest that local bodies should be allowed to appoint organisers; would you not rather have them appoint educators in co-operation?—Yes.

33481 You say credit societies require more attention Do you not think education is more important than organisation?—You may give them that work also. I have no objection.

33482 You think the settlement policy of the Government discourages owners from carrying out improvements Can you give us any instances where owners actually have not carried out improvements for fear of an increase in the settlement rate?—Yes The settlement of the Jubbulpore district is likely to take place in 1928 Now if I had fallow land I should keep it fallow, otherwise in the settlement the land revenue might be increased

33483 Are you actually at this moment keeping the land fallow in order to avoid enhancement of revenue?—Not only I, but a number of other people are doing the same.

33484 You are actually doing it?—Yes

33485 *Sir Ganga Ram*: In another connection you told us that you passed in law and took to agriculture, is that so?—What I said was that I am an LL.B., but I have never practised law

33486. You have taken to agriculture? Is that from a moral point of view or from a lucrative point of view?—It is neither from a moral nor from a lucrative point of view.

33487 Then what has guided your judgment in the matter so as to divert you to agriculture and not to law? Is agriculture more paying than law?—It is not like that. My father-in-law, who was a big landowner in the Jubbulpore district, died in January 1921 and I had taken my LL.B. degree in 1920

33488 He left you all that property?—Yes, and I came and took up the management of his estate so that I had no time to devote my attention to law.

33489. And you are an M. L. C. now?—Yes.

33490. And may I ask you to what party you belong?—I am an Independent.

33491. Is your estate close to that of the gentleman who preceded you as witness?—There must be a distance of at least 50 miles between them.

33492. All I want to know is whether you have any idea as to how irrigation may be brought to your estate?—I have got one irrigation tank in my tahsil.

33493. Do you feel the want of any more irrigation?—It is only in that tract that irrigation can be successful. The rest of the land has got huge cracks where irrigation cannot be of any benefit.

33494. You said your wheat outturn was four times the amount of the seed? How much seed per acre do you sow?—We sow about 100 lbs. per acre.

33495. You never take the advice of the Agricultural Department as to how much seed you should put in?—They suggest 10 *kuros* which amounts to about 100 lbs. per acre.

33496 Is that their suggestion?—Yes

33497. Do you not *bund* up the rainfall water so as to prevent its flowing away?—The whole of our land is water-logged and in the rains we have sheets and sheets of water, extending for miles around

33498 You said, I think, in one place that Government should not discourage *Brahmini* bulls, in other words *Brahmini* bulls should be allowed to spread all over the country?—Yes

33499 That was the old method of breeding, and you consider it the best method?—There are better methods I want to put one bullock in a group of 25 villages, but that is not a practical proposition Funds are not available for the purpose

33500 *Sir Thomas Middleton.* You point out the deplorable condition of livestock in your area and make a number of suggestions for improving them; one is that the Government forests should be opened? What is the present charge for grazing?—I do not remember.

33501 The last witness told us it was from 4 to 8 annas?—That may be so.

33502 Do you think if the Government forests were opened and made free that would make much of a difference?—I would not say that grazing should be made free, but I think that a minimum rate should be charged. The point is this, that if you have a forest area sometimes in the neighbourhood of villages which are densely populated, their pasture land is taken by the Forest Department In that case what are the people to do?

33503 Villagers can get grazing for their cattle at 4 annas or 8 annas per head?—No, the villager provides grass for himself at that rate. So far as the villagers are concerned, they cannot provide anything.

33504. Could their landlords not provide it for them?—Their landlord has to pay even for the pasture land to the Government.

33505. Why not? Why should Government not charge?—If you say that I should leave the pasture land free to my cultivators it is only fair on my part to ask you to keep the land revenue free You do want us to give concession to our tenants while you are not prepared to extend any to us.

33506 I have not asked you to give pasture land free?—As a matter of fact some pasture land is given free by the malguzars They give, I think, free pasture for one pair of bullocks to every 10 acres, and then again the majority of the landowners do not charge anything for the grazing of cows.

33507. You have a thousand acres under your own management? How much pasture land have you got on that thousand acres?—I have set apart one of my forest villages.

33508 *Sir Thomas Middleton* It is part of the 9,000 acres?—Yes.

33509. You set that apart and you charge nothing for the grazing from the cultivators?—No; they have got that right only in the vilage in which they reside. They cannot assert that right in my other villages

33510 So that you act very much as the Government does?—Yes.

33511. *Sir Henry Lawrence.* What rates do you charge for your grazing?—If a tenant has got 10 acres, I give him grazing free for one pair of bullocks.

33512. For the others what do you charge?—From 2 annas to 12 annas per year. And then I have other advantages; I may utilise their cowdung and other things. That is a most important thing.

33513 *Sir Ganga Ram:* You get milk free from them?—Not at all.

33514. *Prof. Gangulee:* Do you give the cultivator a receipt for the amount he pays you?—If he wants it, I give it to him.

33515. Does this note which you have presented to us represent your own views or the views of your Association?—There is not much difference between the Association and myself.

33516 This note was not presented before your Association?—Yes, it was presented and discussed with its leading members.

33517. *Dr. Hyder:* You are a malguzar?—Yes.

33518. And you carry on this business of agriculture in order to make a living?—Certainly.

33519. You are against the export of fodder from the Central Provinces to the United Provinces?—Yes.

33520. Would you be against the export of wheat which you raise to the United Provinces or to any other tract?—No.

33521. You would not be against the export of wheat because that would bring down the prices and you might find yourself in a desperate position? Why is it then that you are against the export of fodder?—Because it takes away the capital which I have got.

33522. What capital?—If my cattle die early or if they are in a weak state of health owing to shortage of fodder that means that you are taking away so much from the capital itself.

33523. Let us pursue this matter further because you have mixed up a number of matters The United Provinces people do not force away the fodder from you because they pay you a higher price Suppose you did that, your fodder would not leave your estate? Why are you against the export of fodder when you are not against the export of wheat? Do you not see any inconsistency there?—No, food material which is absolutely necessary should not be exported, even if the general policy of Government be one of free trade

33524 Supposing the Government prohibited the export of wheat or cotton, would you favour that measure?—No

33525 Then why do you favour this measure with regard to the export of fodder?—Because a minimum should be allowed to remain here.

33526 Take the question of cattle? You say that more and more land is being taken up for cultivation and that there is a diminution in the area available for pasture? If that is so, how are you going to keep the balance even between your cattle and your people?—I have said that it is desirable that some sort of legislation should be undertaken to stop the encroachment on pasture land

33527 Suppose that were done and suppose your suggestion were followed that there should be no diminution in the number of cattle, would there not be a tendency for the cattle to increase?—Yes.

33528 Do you not think that the time would come when your cattle would eat up your children? I put it to you that the peasant's children may be crying out for wheat or rice and the wheat and rice may not be there but your fodder for your cattle may be there? Do you see that?—If you have to carry on cultivation you must have a certain number of bullocks and if you keep a certain number of bullocks you must provide fodder also for them.

33529. But couple it with your suggestion that there should be no other use of cattle but for agricultural purposes? If you put no limits on the cattle population, the bread would be taken away from the children of the peasant and you might find yourself in a predicament?—If that sort of a situation were to arise I am sure that we should get another Commission without much delay.

33530. Take another matter. I only mention this because you have referred to other countries Do you know what the taxation on land is in other countries? Have you any idea? Do you know that they fix a levy on land in other countries?—Yes. What I meant to say was this that in no country does the land revenue form such a large proportion of the total receipts from all sources as it does in India. That was my idea when I wrote that, and I still adhere to that opinion.

33531. Does that mean that the land revenue sits very heavily on the gross or on the net produce?—I think we are paying more. Take England, for instance, where you have to pay 60 shillings for an acre of land; their wheat outturn is something like 2,000 lbs. per acre, while the best we can get in the Central Provinces is 600 lbs

33532. You know that the English landlord is subject to a certain schedule and he has got to pay income-tax. Do you know that he has got to pay the local rates? Do you pay any income-tax?—No.

33533. Do you know that in Italy the land is subject to a basic rate of 10 per cent; then there is local taxation, communal taxation, and the State taxation?—But what is the average yield per acre there?

We are concerned here with the net profits on which the assessment of land revenue is made.

33534. I pass on to another matter Do you have many wells on your estate?—Yes

33535. Do you charge your cultivators for the use of those wells?—No.

33536 Why do you ask the State then to keep its water rate rigid?—Because the development and prosperity of 90 per cent of the people means something to the State The State would be nowhere if 90 per cent of the people were to disappear.

33537 To revert to this question of taxation, you charge *nazarana*?—Yes.

33538 Do you not capitalise all the future increments in this *nazarana*, thing for giving him the right

33539 Do you not capitalise all the future increments in this *nazarana*, and leave the State with nothing to tax?—So far as *nazarana* is concerned, you can get very good *nazarana* where there is income from other non-agricultural sources, but in hilly tracts and thinly populated places you have to lease the land as best you can.

33540 Where the land is irrigated and well populated, the malguzars take away whatever the peasant produces and leave the peasant destitute and the State bankrupt Would that be an exaggeration?—It is certainly an exaggeration so far as this Province is concerned. We have not got that acute problem of tenancy which they have in the United Provinces

33541 *Sir Henry Lawrence* I understand you have studied the financial position of the Province?—Yes.

33542 And you wish to have more expenditure on agriculture?—Quite so.

33543 And more expenditure on sanitation?—Yes; as a matter of fact, more expenditure on rural areas. That is the correct position to take up

33544 You want more expenditure in the way of subsidies to coal mines?—I am not concerned with coal mines I should be very glad if I get some subsidy for the agricultural classes

33545 You have suggested that a subsidy should be paid to coal mines?—What I have suggested is that while Government are taking so much interest in industries, they should give assistance to agricultural industry also.

33546 You say, "If such mines can be worked even on getting subsidies from Government, they should be encouraged to start work" Does it not mean subsidies? Where is this money to come from?—From those very sources which gave Rs 50 lakhs to the Tata Iron and Steel Co.

33547 Does the money not come from the people?—It has already come in some cases

33548 You want to abolish the salt tax?—That I would.

33549. Are you in favour of the prohibition of alcohol?—Everybody should be in favour of it.

33550 You are prepared to face a loss of Rs 160 lakhs from alcohol in the provincial revenue?—There is no justification for carrying on this traffic in vice.

33551. I am asking for your views on the financial system. You wish all this increased expenditure to be incurred; you wish to stop taxation; where is the money to come from?—The difference is this: you are proceeding on the assumption that the present position of the State would continue, but when you take up my position you presume that the State would not have such a position as it has now.

33552. What is your position?—I must get more money for the agricultural classes and for agricultural development. That is my position.

33553. Where from?—From the State.

33554. *Sir Thomas Middleton*. From the landowning classes.

33555. *Dr. Hyder:* Would you favour the taxation of *nazarana*? Would you divulge or disclose it?—I am prepared to do my part if the State is also prepared to make a sacrifice. You cannot have two sets of principles, one for the State and the other for us

33556. At present you levy *nazarana*?—As a matter of fact, *nazarana* income has to pay income-tax.

33557 *Nazarana* income is not disclosed?—Here we have to pay it.

33558 You do not pay on *nazarana*?—We do.

(The witness withdrew)

The Commission then adjourned till Monday, the 31st January, 1927, at Lucknow.

MR K P PANDE.

Govt Press, Nagpur :—No 183. Ch, Secy.—6-8-27—2,002.

INDEX.

(Figures in brackets refer to pages, other figures to questions.)

Administration:

Agricultural Department, *see that title.*
Agriculture and education should be under same Minister, *Dokras* 32,492
Board of Agriculture, Central, no force behind recommendations, *Plymen* 28,270
Board of Agriculture, Provincial, *Plymen* (27), 27,558-61, 27,580-1, 27,608-9, 27,858, 27,915-6
Co-operation Department, *see under* Co-operation.

Co-ordination of activities of various Governments
see also under Research
Bureau for summarizing of work, to be maintained by Central Government, proposal, *Plymen* (27), 27,547-50, 28,182-4.
by Financing of certain schemes by Central Government, proposal, *Plymen* (27)
Fuller exchange of experience and opinions between officers of Provincial Agricultural Departments advocated, *Deshpande* (298).
Co-ordination between provinces on common subjects advocated, *Korde* (317-8)
District Boards, *see that title*
Education, *see that title*
Forest Department, *see under* Forests.

Government of India
should only Deal with activities beneficial to whole of India, *Pande* (529-30)
Functions of, should be mainly advisory, *Korde* (318)
Relations with Local Governments, *Khaparde* (400).
Industries, Department of, close co-operation with other departments necessary, *Deshpande* (302)
Industries, Advisory Board of, functions, *Irwin* 31,324-5
Irrigation, *see that title*

Meteorological Department
Existence of, little known to agriculturists, *Pande* (530).
Good work done by, *Deshpande* (298)
Increased use should be made of, by Department of Agriculture and information published to agriculturists, *Sahasrabudhe* (458)
Information, improved methods would be welcomed, *Plymen* (27), 28,185-7
Information to Berar agriculturists desirable, *Khaparde* (400).
reliable Monsoon reports, would be advantageous, *Irwin* (343)
Research on reduction in rainfall and its uncertainty, need for, and for wide and regular publication of results, *Korde* (318).
of no Service to general body of agriculturists and proposals re, *Dokras* (480)
Services satisfactory, but not used by villagers, *Bhargava* (427)
Meteorology, lectures on relation of agriculture and, suggestion, *Sahasrabudhe* (458).
Minister for Agriculture, proposal, *Allan* (197), 29,723-4, 29,802-6
Post Office Savings Banks, available but not used by agriculturists, money hoarded as silver ornaments, *Dokras* 32,663-5

Postal facilities
Fair, *Bhargava* (427)
in Rural areas, inadequacy of, and need for improvement, *Deshpande* (298), *Korde* (318), 30,828; *Khaparde* (401).
Satisfactory, *Sahasrabudhe* (458).
fairly Satisfactory, *Dokras* 32,662

Railways:
Adequacy of, *Allan* (202).
better Facilities for transport of cattle advocated, *Dokras* (480).

Administration—*contd*

RAILWAYS—*contd*

Facilities for transport of grass supply, suggestion for improvement, *Korde* (319)

Feeder roads, need for, *Irwin* 31,141-4, 31,148-50

Freight rates

for Agricultural produce should be lower than common rates, *Dokras* (480), 32,514-6

Anomalies should be attended to, *Allan* (202)

Concession rates to farmers advocated, *Deshpande* (298).

Concessions for agricultural produce and live stock, suggestion, *Pande* (530)

Cultivators' prosperity, injured by, and change advocated, *Bhargava* (430).

Examination of, desirable, *Plymen* (27), 27,551-61

on Implements, concessions advocated, *Deshpande* (301), *Dokras* (483), *Dwarkanath Singh* (502).

on Inferior kinds of coal, reduction to minimum advocated, *Pande* (531)

Opening of branch railways advocated, *Sahasrabudhe* (457).

Pilfering and damage during transit, *Deshpande* (298)

Provision considered satisfactory, *Plymen* 27,562

Reduced inland rates for rural produce advocated, *Sahasrabudhe* (457)

Restraint on export of certain agricultural necessities might be necessary in some cases, *Pande* (530)

Special facilities for anti-rinderpest serum suggested, *Wilson* (333)

Special facilities and concession rates for transport of raw produce and fodder advocated, *Korde* (318), 30,884-5

Waggons, inadequate supply in harvest season, *Deshpande* (298).

Research, *see that title*

ROADS

Baluta system, return to, desired, *Korde* 30,818-9

Construction of, from loans, proposal, *Irwin* 31,068-70, 31,096-100, 31,151-6

Construction and maintenance by Government and by District Council, defined policy advocated, *Brahma* (242-3)

Control of, *Irwin* 31,170-3, 31,302-4

District Boards' attitude, *Irwin* 31,121-2, 31,253-9, 31,328

under District Boards, funds insufficient for maintenance, *Pandeya* 28,795; *Brahma* 30,010-15

Facilities, *Allan* (202)

Feeders to railways, need for, *Irwin* 31,141-4, 31,148-50.

Forest

Construction advocated, *Pande* (537)

Construction, particulars re, expenditure on, etc., *Witt* (276).

Nature of, *Witt* 30,408

Use of, by general public, *Witt* (276), 30,340-1

Importance of, for agriculturists, *Korde* (318); *Irwin* (343), 31,092-5

Improvement and extension needed, *Bhargava* (427).

Inadequacy of, in Berar, *Brahma* (242), *Khaparde* (400).

Lack of, in Jubbulpore district, due to lack of money, *Irwin* (343), 31,252-9

Metalled, increased number advocated, *Dokras* (480)

few Metalled roads, Jubbulpore district, *Bhargava* 32,289

in Paddy tracts, condition of, *Plymen* 27,776-8

in Rural areas·

Importance of, *Pande* (530).

Provision of, with light railways, proposal, *Pande* (537).

Secondary feeder roads, need for, *Allan* (202).

Toll system not in force, *Irwin* 31,155-6.

Village·

Bad condition, *Irwin* 31,135.

Condition of, under District Councils not satisfactory, *Sahasrabudhe* (457)

Administration—*contd.*

ROADS—*contd*

Village—*contd*

Difference between wheat growing tract and rice and cotton growing tracts, *Irwin* 31,243-4

Fair weather, need for improvement and Government must undertake, *Korde* 30,747-50, 30,780-3, 30,811-7

Neglect of, and proposed remedies, *Brahma* (242-3)

Repair, compulsory supply by every adult of one day's labour for, proposal, *Brahma* (242), 30,016-9

Suggestions for improvement, *Sahasrabudhe* (457)

TELEGRAPH SERVICE

Facilities fair, *Bhargava* (427)

Inadequacy of, and need for development in rural areas, *Deshpande* (298), *Korde* (318), *Khaparde* (401)

Satisfactory, *Sahasrabudhe* (458).

Transport, improved facilities needed, *Deshpande* (298), 30,459-63

Veterinary, *see that title*

Agricultural Department:

Agricultural Bacteriology section, proposal for expansion, *Plymen* (25)

AGRICULTURAL ENGINEER

Functions, *Plymen* 27,948-58, 27,962.

Post at present vacant, *Plymen* 27,457, 27,944, *Allan* 29,738-9

proposed Status and functions, *Plymen* (30)

Status should be improved, *Allan* 29,754-5

Assistance from Revenue officers, *Allan* 29,674.

Assistants, relations to Deputy Commissioner, and proposal, *Irwin* 31,270-1.

Attention concentrated mainly on export crops, *Allan* 29,829-36

BUDGET

Amount and increased sum that could be spent, *Plymen* 28,216 21.

Cut in, after report of Co-operation Committee, *Pande* 33,358-67

Procedure, *Plymen* 27,606-9

Control of animal husbandry operations by Civil Veterinary Department rather than by, desirable, but not suitable in Central Provinces, *Wilson* 30,929-36, 31,031-8

Co-operation with co-operative societies for sale of produce or stock, necessity for, *Trivedi* (171)

close Co-operation with Co-operative, Veterinary and Industrial Departments necessary, *Deshpande* (302).

Cotton paid more attention to than other crops, *Plymen* 27,861-5

Demand for services of by cultivators, increasing, *Plymen* 27,658-9.

DIRECTOR OF AGRICULTURE

Control of Civil Veterinary Department by, *see under* Veterinary.

Indian as, advocated, *Pande* (533).

proposed Position, etc., *Pande* (533)

Qualifications required, *Plymen* 28,130-2

Relations with Civil Veterinary Department, *Plymen* (30).

Distribution of work, *Plymen* (9-10)

Expansion necessary, *Dubey* (102)

increased Expenditure on, advocated, by decreasing number of excise officers, *Dokras* 32,606-9, 32,575-80, 32,619-21.

Extra Assistant Directors, functions, etc., *Plymen* 27,458

Increased funds necessary and question of source of, *Pande* 33,541-55

Horticultural section, proposed strengthening of, *Plymen* (32)

Improvement in service since introduction of Reform scheme, *Pande* (530), 33,368-77.

Lectures to young officers of various departments on rural economy, *Plymen* 27,725-9

Men desirous of carrying on private farming should be allowed to retire on proportionate pension and assisted by subsidy or loan, *Dubey* (101), 28,486, 28,660-4, 28,731-3.

Organisation, *Plymen* 27,457-60, 27,897-8, 28,115-20.

Agricultural Department—*contd*

People have little faith in activities of, *Pande* (529), 33,387-92
Policy, *Sahasrabudhe* (452), 32,441-2, 32,478
Provincial organisation, proposal, *Korde* (317).
Relations with Forest Department, *Plymen* 27,718, *Witt* 30,211-2, 30,349.
Relations with Irrigation Department, *Plymen* 27,578-82, 27,586, 27,827-9, *Pollard-Lowsley* 28,875-6
Results of work, *Plymen* 27,866-70
Ryots in Burhanpur area not aware of existence of, *Amanat Ali* 31,710, 31,784-6
Services fair, *Dubey* (102), *Bhargava* (427)
Service not satisfactory, *Korde* (318).
Services satisfactory, with resources at disposal, *Irwin* (343)
Shortening of period of service for pension suggested in order to induce men to take up farming, proposal, *Allan* (210), 29,716-20

STAFF

Attitude towards farmers, recommendations *re*, *Sahasrabudhe* (456-7)
Inadequacy of, *Dubey* (102)
Increase advocated, *Dokras* (479)
Indians advocated, *Khaparde* (399)
Greater insight into working of Revenue Department would be useful, *Allan* 29,730-2
Interchange with officers of Revenue Department would be advantageous, *Dubey* 28,772-4
Junior officers, transfer between wheat and cotton tracts undesirable, *Dokras* (479), 32,647-8
Suitable men should be sent for training to more advanced countries, *Dubey* (102)
Subordinate
Attitude of, *Deshpande* (298)
Increased travelling allowances advocated, *Dubey* (102)
Superior Service, opinion *re* training, *Plymen* 27,845-6
Upper and Lower Subordinate services, initial pay, *Plymen* 28,176, 28,179
Special Statistical Officer and Economist should be added to staff, and proposals *re* status, &c., *Plymen* (25), 27,500-3, 27,537
Subordinate Service, organisation, *Plymen* 27,459-60
Unirrigated areas attended to equally with irrigated, *Plymen* 27,528-30.

Agricultural Indebtedness:

Advances by landowners to tenants, *Khaparde* 31,883-7, *Bhargava* 32,176-7, 32,307-11, *Pochory* 32,920-2, *Pande* 33,240-1
Assistance to cultivators through agencies such as Land Mortgage Banks, scope for, *Plymen* (28), 27,564
Bank for advancing money to cultivators advocated, *Dubey* (103), 28,650
Causes of, *Plymen* (6), *Powar* (90), *Dubey* (103); *Pandeya* (125), *Allan* (202), 29,849-54, *Brahma* (243-4), 29,945-7, 30,066-7, *Deshpande* 30,677-8, *Korde* (318), *Irwin* (343), 31,350-2, *Amanat Ali* (386), *Khaparde* (401), *Bhargava* (427), *Sahasrabudhe* (459), (459-60), *Dokras* (480), *Dwarkanath Singh* (497-8), *Pochory* (517), 33,166-9, *Pande* (530).

CONCILIATION BOARDS

Considerations *re*, and trial of, advocated, *Dwarkanath Singh* (499), 32,734-9
Formerly, *Irwin* 31,343-5, *Pande* 33,411-4.

CREDIT

see also under Finance
Effects of system of obtaining, *Plymen* (8)

Agricultural Indebtedness—*contd.*
CREDIT—*contd.*
Restriction
not Advocated, *Dokras* (480).
not Desirable at present, *Powar* (91).
Sources of, *Plymen* (6-7), *Powar* (90), *Dubey* (103), *Brahma* (244), 30,084-6, *Korde* (318); *Irwin* (343), *Amanat Ali* (386), *Khaparde* (401); *Bhargava* (427), *Sahasrabudhe* (458), (460), *Dokras* (480), *Dwarkanath Singh* (498), *Pochory* (517), *Pande* (530).
Damdopat, *Dokras* 32,562, *Pande* 33,286-8
Rule should be applicable to persons and in all cases, *Brahma* (243), 29,939-44, 30,045, 30,048, 30,164-8
Debt per head, increasing, *Pande* (539), 33,348-52
Deccan Agriculturists' Relief Act, an unnatural measure and failure of, *Brahma* 30,046-7
Education the only remedy, *Sahasrabudhe* (460).
Gambling, connection with indebtedness and evil of, and need for remedy, *Dokras* (480), 32,551-9, 32,564, 32,611-4
Government Central Banks on lines of Co-operative Banks, proposal for, *Korde* (318), 30,874-8
Increase, *Powar* 28,431, *Brahma* 30,027, 30,036-7, *Khaparde* (401)
Inherited debt, insolvency question, *Pande* 33,449-54
Insolvency Acts, should be more applicable to farmers than to merchants, *Amanat Ali* (386)
Interest, rate of, question of restriction, *Pandeya* 28,826-7
among Kunbis, *Sahasrabudhe* 32,428.
Legislation on lines of Deccan Agriculturists' Relief Act advocated, *Plymen* (28), *Allan* (203)
Legislation on lines of Punjab Alienation of Land Act, not advocated, *Dokras* 32,552
proposed Measures for lightening burden of debt, *Powar* (90-1), *Allan* (203), *Deshpande* (298-9), *Korde* (318), 30,870-5, *Irwin* (344), *Amanat Ali* (386), *Khaparde* (411), *Bhargava* (427), *Sahasrabudhe* (460), *Dokras* (480), 32,649, *Dwarkanath Singh* (499), *Pande* (530)
proposed Measures for preventing, *Brahma* (243), (244)

MONEY LENDERS
should be Bound to give loans at not more than settled rate of interest, *Pochory* (517), 32,926-9
Dealings with, should be stopped, *Dubey* (103)
Desire to remain on books of, *Irwin* (343), 31,072-4
Doubling of loan in one season, *Korde* (318), 30,864-9
Keeping of accurate accounts on paged books, compulsion would not be objected to, *Brahma* 30,087-8
Necessary until co-operative societies able to meet whole demand, *Deshpande* 30,654-7
Passing of land into hands of, *Dubey* (103), 28,624, *Dokras* (480), 32,550-1, *Dwarkanath Singh* 32,791-2
Rates of interest charged by, *Korde* (318)
Effect of Credit Societies, *Brahma* 30,140-2, *Trivedi* 29,550-2
Reason for cultivators borrowing from, rather than from credit societies, *Khaparde* (401)
Restrictions on, advocated, *Pandeya* (125)
System, *Khaparde* (401)
System and evils of, *Amanat Ali* (386), 31,777-80, *Sahasrabudhe* (459), (460), *Dwarkanath Singh* (498), 32,728-33
Moneylenders' Act, passing of, as in the Punjab proposed, *Sahasrabudhe* (460).
Money lending, by Brahmins, *Dokras* 32,560-2

MORTGAGES:
of Absolute occupancy land, proposed restriction, *Pochory* (517).
Limitation of right of, not desirable at present, *Powar* (91)
Long-term, advantages over short-term, *Sahasrabudhe* (459)
Non-terminable.
Objected to, *Pande* (530).

Agricultural Industries—*contd.*
Obstacles to development of small industries, and proposed remedies, *Sahasrabudhe* (465)
Obstacles in way of expansion, *Powar* (92).
Paper pulp and paper making from cotton stalks, experiments and proposal re, *Sahasrabudhe* (463-4), (466), 32,431-3

Poultry Keeping *Plymen* (32), *Khaparde* (405)
Caste objections, *Brahma* 29,951; *Irwin* (345), 31,107, 31,109, 31,236-31,240, *Bhargava* (430).
Encouragement as subsidiary industry advocated and proposed measures for, *Dokras* (484), 32,531
Kunbis would not take up, *Sahasrabudhe* 32,458
Prospects, *Dubey* (106), *Khaparde* (405)
Prospects of, and obstacle of religious sentiment of Hindus, *Dwarkanath Singh* (502).

Preparation of Agricultural Produce for Consumption
Government measures for establishment
Desirable, *Korde* (319), *Khaparde* (406), *Bhargava* (430)
Objections to, *Irwin* (345-6).
a Matter for private enterprise, *Plymen* (32)
Previous enquiries into, *Sahasrabudhe* (465)
Requirements for successful taking up of, *Powar* (92)

Rope Making *Khaparde* (406), *Sahasrabudhe* (465)
Advantageous if introduced successfully and managed by local men, *Pandeya* (127), 28,806
for Home use mainly, *Irwin* 3112-3, 31,189-91.
Obstacles to development, *Dwarkanath Singh* (502)
no Prejudice against, *Brahma* 29,950
Proposal, *Khaparde* (405).
Prospects, *Plymen* (32)
Rural employment, increase of, improvement of whole agricultural position only measure necessary, *Plymen* (32)
Scope for, and irrigation facilities and financial help would be required, *Powar* 28,421-4

Sericulture
Caste objections, *Irwin* (345), *Bhargava* (430)
in Forests, position, *Witt* 30,226-31, 30,368-9
Unsatisfactory results, *Plymen* (32)
Smithy, suggestions for assistance, *Sahasrabudhe* (466).
Spinning, proposal, *Bhargava* (430), *Sahasrabudhe* (466)
Subsidiary industries, other than agricultural, objections to establishment, *Dubey* (106)
Subsidiary industries, suggestions as to suitable industries, *Brahma* (245), 29,949-51, *Khaparde* (405), *Bhargava* (430), *Pande* (535).
Subsidiary industry, agriculture as, *Dubey* (107).
Time spent by average cultivators on holdings, *Powar* (92), *Dubey* (106); *Pandeya* (126), 28,362-74, *Brahma* (245), 30,137-9, *Korde* (319), *Khaparde* (405), *Bhargava* (430), *Sahasrabudhe* (464-5), *Dwarkanath Singh* (501-2), 32,863-74, 32,877-8, *Pande* (535)
Vegetable growing, encouragement proposals, &c., *Plymen* (32), 27,697-27,701, *Dubey* (106), *Pandeya* (125), 28,778-80, 28,831

Weaving *Sahasrabudhe* (466).
Proposal, *Bhargava* (430).
School, suggestion re opening of, *Sahasrabudhe* (466).
for Women, need for, *Sahasrabudhe* (465).

Agricultural Labour:
Berar, training of existing labour preferable to importation, *Khaparde* (407)
Binding of labour to villages, proposal, *Pochory* (517), 32,967-73, 33,010-33,020, 33,182-4.
Emigration, *Plymen* (4), 28,073.
Employment, extent of, and amount of idle time, *Powar* 28,360, 28,365-6, 28,369-74.

Agricultural Labour—*contd*

Extension of cultivation in ryotwari lands in Balhar Tahsil, suggestion for, *Dubey* (107)
Hours of work, regulation by sunrise and sunset and need for alteration, *Khaparde* (407)
Labour-saving machines, results of introduction, *Pande* (537).

Migration. *Powar* (93).
to Cotton tract, *Plymen* (5).
Permanent, reluctance of labourer to leave native place, *Khaparde* (407).
Seasonal, *Plymen* (32) *Dubey* (107), *Allan* (208), *Irwin* (346).
to Wheat area, *Plymen* (4-5)

Mobility of, *Pande* (536)
Moving of, from one place to another, objections to system of, *Pande* (536, 537)
Proportion of cultivators and labourers, variation in, *Irwin* 31,211-8
Returned after migrating, change in standard of living, *Powar* 28,425-8
Ryotwari villages, *Plymen* (33)

Shortage *Amanat Ali* 31,631-4.
Causes *Plyman* 3-4, 5), (33), 28,069-72, *Powar* (93), *Dubey* (107), *Allan* (208), *Khaparde* (407), *Pochory* (517), 32,964-6, *Pande* (532), (536), 33,295-8
Eastern Circle, *Powar* 28,346, 28,359.
owing to Epidemics, and poverty owing to uneven employment on agricultural operations, *Bhargava* (430)
Means of overcoming, *Plymen* (33), *Powar* (93), *Khaparde* (407), *Pochory* (517)
in certain Tracts, *Allan* (208)
little Surplus of, *Pande* (536).
no Surplus, *Irwin* (346)
Surplus in rice and plateau tracts, *Allan* (208)
Taking up of work under other departments at times, *Powar* 28,360-2, 28,368

Uncultivated land
better Dealt with by settlement with cultivators than by importation of labour to work under local capitalist, *Irwin* (346)
Leasing out of, scheme, *Pande* (536)
Question of encouraging settlement on, *Plymen* 27,806-9
Settlement on, scheme for, *Khaparde* (407)

Wages, *Plymen* (4), *Bhargava* 32,317-21, *Dolras* 32,549, *Pochory* 32,969-73, 33,080-3, 33,147-8

ALLAN, R. G., Principal, Agricultural College, Nagpur. (196-219), 29,620-29,905, (238-240n)
Training and past appointments, 29,622

Administration
Minister for Agriculture, proposal, (197), 29,723-4, 29,802-6
Railways
Adequacy of, (202)
Freight rates, anomalies should be attended to, (202).
Roads
Facilities, (202)
Secondary feeder roads, need for, (202)

Agricultural Department
Agricultural Engineer
Post in abeyance, 29,738-9
Status should be improved, 297.
Assistance from Revenue officers, 29,674.
Attention concentrated mainly on export crops, 29,829-36
Staff
greater Insight into working of Revenue Department would be useful, 29,730-2.
Shortening of period of service for pension suggested in order to induce men to take up farming, (210), 29,716-20.

ALLAN, R. G.—*contd.*

AGRICULTURAL INDEBTEDNESS
Causes, (202), 29,849-54
Legislation on lines of Deccan Agriculturist Relief Act advocated, (203).
Lightening of burden of debt, measures for, (203).
Mortgages, restriction of right, proposal, (203), 29,649-51
Repayment, reasons preventing, (202-3)

AGRICULTURAL LABOUR
Seasonal migration, (208)
Shortage in certain tracts, (208).
Surplus in rice and plateau tracts, (208).

ANIMAL HUSBANDRY
Cows, well fed when giving good milk, 29,654, 29,697.
Dairying industry
Betterment
Importance of betterment of stock for, (207)
Proposals for, (207)
Consumption of milk and milk product by vegetarian population, importance of, 29,655-6
Fodder
Baled grass from forests
Large amount possible but difficulty of transport, (208).
no Sale for, 29,707
Dry, supply sufficient but for use by valueless cattle, (207)
Grass, no lack of, 29,708
Green, absence of, in dry seasons, difficulty of remedying (207-8)
Increase of area under *juari*, suggestion, (207).
Silage
Demonstration at Nagpur college dairy farm, 29,904-5.
Possibilities, 29,709-13.
Stall feeding, 29,698-9
Future cattle breeding development in Central Provinces and Berar, (211-219)
Government stock-breeding, defects of, in the past. (206)
Grazing
Forest areas, scheme for, 29,700
Grass borders, reduction of area (207).
Overstocking of common pastures, (207)
Improvement of breeds
Breeding of bullocks rather than bulls, proposal, 29,653.
Financing of, suggestion, 29,652
Food supply the limiting factor, 29,702-4
proposed Policy, (206-7)
Interest of landowners in, extent of, and question of extending, (208)

CAPITAL, ATTRACTING OF
Factors preventing men with capital from taking up farming, (209).
Means proposed, (210).

CROPS
Cassava, suggestion, but no great scope for, (205), 29,814-8.
Cotton:
Cultivation, particulars *re* system, costs, income, etc, (240i-240n).
Financial results, question of, 29,870-4.
Damage by wild animals and measures taken to prevent, (204-5).
Deterrent of cost of seed to expansion of certain, 29,860-4.
Groundnut, area under, and prospects, 29,725-9, 29,819-20.
Improvement:
Staff, increase required, (204).
Work on, (204).
Introduction of new crops, progress in, (204).

ALLAN, R. G.—*contd.*
CROPS—*contd.*
Seeds, distribution of
Central seed farms belonging to each circle agricultural association, scheme, (204)
new Cotton, proposal *re*, (204).
Roseum seed unions, (204)
CULTIVATION
Deeper cultivation and use of inversion plough in cotton tract, success in introducing, (201), 29,756
Line sowing of kharif crops, success in introducing, (201)
Rotation, non-application of, reasons for, in certain cases, (205)
Tillage system, improvement
"Bakhar" cultivation for kharif crop, defect of, (205)
greater Depth of primary cultivation desirable in certain crops, (205)
DEMONSTRATION AND PROPAGANDA
Agricultural Associations, 29,810-3
small Circle associations formation of, scheme, (201)
Class towards which work directed, 29,865-9
Failure of for transplantation of paddy in Chhattisgarh, (201)
Field demonstrations, staff, number &c., and need for increase, 29,746-9
Inducing of cultivators to accept advice, means for, (201)
Public attitude *re*, 29,761-5
Success, examples of, (201), 29,756-8
Village demonstration plots, value of, (201)
EDUCATION
Adult, proposals, (200, 201), 29,668-70
Agricultural
Colleges, groups to be catered for, and course required, (208-9) 29,657-62
Collegiate or advanced, demand for, (198)
Demand for, means of encouraging, (198)
Home farm managers, difficulty of meeting applications for, (200)
Hoshangabad, (198), 29,643-8
Importance of actual demonstration and propaganda in connection with, (198), 29,759-60
Incentives (199)
Inclusion in school curriculum as class room or examination subject not advocated, (209)
Institutions, supply of, sufficient for present demands (198)
Nagpur Agricultural College
Admission
Demand for, increase, (199)
Selection of candidates for, (199)
Affiliation with University, (208) 29,766-7
Animal husbandry teaching, 29,903-5
Assistants, no time for research, 29,633-5, 29,821-3
Cost per student per annum, 29,837-8
Courses, (209), 29,660, 29,689, 29,774-89, 29,881
Extension will be necessary, (198)
Farm, visits to, by teachers, 29,794
Intermediate stage as entrance standard, objection to, 29,689
Lectures for revenue officers at, and question of extension occasionally, 29,676-83, 29,790-7
Principal, work of, 29,629-32
Research work, nature of, and close collaboration of research Staff officers, 29,624-8, 29,800
Students
After Careers, (200), 29,807-9, 29,846-8
Initial pay in Government service and prospects, 29,876-9
Prospects of those taking up farming, 29-870-94.
Quality of, 29,685-8
Small number taking to farming, reason, 29,839-45

ALLAN, R. G.—*contd.*
EDUCATION—*contd.*
Agricultural—*contd.*
Pre-vocational or conducted as part of rural school general education, extent or demand for, etc., (198).
in Schools, type advocated, (199).
Short course or specialized adult training, facilities, (198).
Teachers.
from Rural areas generally preferable to town bred men, (198).
Supply of, sufficient for present demand, (198).
Students.
Source of, (199).
subsequent Technical training.
Difficulty, (200).
Probationary posts, increased number suggested, as means of providing, (200)
in Village schools, cash return to children for output, proposal, (200-1).
Vocational
Demand anticipated, (198-9), 29,646.
Extent of demand for, (198)
Failure of schools to attract class for which organized (198-9), 29,643.
Agriculture as matriculation subject, objection to, 29,691-3.
Higher or collegiate, importance of, as means of extending interest of landlords in agriculture, (208).
Nature study
Teaching of, difficulty of finding men for, and proposal, 29,740-5.
Value, extent of, (199).
Rural
greater Attention to training of hand and eye, utilizing rural industries and rural life advocated, (209).
Improvement of ability and culture of agriculturists, proposals for, (209).
Teachers, the difficulty, importance of right type, 29,663-7.
School farms.
should be Associated with places giving vocational training, (199)
Unsuitability to rural school needs and conditions, (199).
School plots
in Middle Schools, proposal for, (209).
at Rajnandgaon, (199).
Requirements for success, (199).
University, Faculty of Agriculture, 29,768-73.
FERTILISERS
Ammonium sulphate, increased use of, (203).
Artificial, increased use, scope for, (203).
Cakes, increased use of, (203)
Natural, increased use, scope for, (203).
New, importance of keeping prices as low as possible, (203).
Phosphates, etc.:
Investigation, increase needed, (204).
Results, (204).
Popularisation, means, (203).
FINANCE
Cheap credit, cultivators not educated to use of, (202).
Taccavi advances:
Extension, special officer to deal with, in each district, proposal, (202).
Objections to, (202).
IMPLEMENTS
Adoption of improved, expansion of *taccavi* proposed, (206).
Improvements:
Lines on which desirable, (206), 29,900-2.

ALLAN, R. G.—*contd.*

IMPLEMENTS—*contd.*

Improvements—*contd.*

Unsuitability of implements of western manufacture to Indian needs, (206), 29,895-9.

Introduction of, measures taken to encourage, (206).

INDIAN CENTRAL COTTON COMMITTEE, value of, (197), 29,642.

LAND SYSTEM, Malguzar system of tenure, evils of, (203).

LANDOWNERS

Education of, to sense of responsibilities, importance of, (208), 29,714-6.

Improvements by, difficulties owing to fragmented holdings and tenant rights, (210).

Large number have no interest in agriculture, 29,865-6.

MIDDLE-CLASS YOUTHS, reasons for unattractiveness of agriculture to, (200).

RESEARCH:

Agricultural Engineering and implement design, need for, but difficulty of carrying out, (197), (198).

Crop Committees, scheme, (197), 29,640-2.

Financing, small cess on exports of agricultural produce, scheme, (197), 29,636, 29,750-3, 29,824-8, (238-40)

Fruit growing, need for expert for, 29,734-7.

General, financing of, mainly by Central Government advocated, (196), (201-2), 29,694-6, 29,721-4

Horticultural, lack of expert assistance, proposal, (197), 29,733-7

Lines on which required, (197-8)

Local, financing of, by Local Governments advocated, (196).

Oilseed crops, need for, (198)

Organisation, central body, scheme for, (197), 29,639-42, 29,802-5, (202)

Plant breeding and botanical research, hampered until lately by lack of expert staff, (197).

Soil investigation, lack of staff and equipment, (197).

Soil physics, need for, (198).

SOILS, better drainage during monsoon desirable in certain cases, (203).

SUGARCANE:

Coimbatore station, value of, (197)

Manuring, (203), (204)

AMANAT ALI, Mr., Burhanpur: (386-388), 31,620-31,868

Agricultural operations, 31,623-45, 31,693-700, 31,704-9, 31,726-37, 31,741-69, 31,787-805, 31,818-68.

AGRICULTURAL DEPARTMENT, Ryots in Burhanpur area not aware of existence of, 31,710, 31,784-6

AGRICULTURAL INDEBTEDNESS.

Causes of, (386).

Credit, sources of, (386).

Insolvency Acts, should be more applicable to farmers than to merchants, (386).

proposed Measures for lightening burden of debt, (386).

Moneylenders, system, interest charged, etc., (386), 31,777-80.

Repayment, reasons preventing, (386).

Usurious Loans Act, enforcement advocated, (386).

AGRICULTURAL LABOUR, shortage, 31,631-4.

ANIMAL HUSBANDRY:

Bullocks, feeding and condition of, 31,684-91.

Cows, feeding of, 31,856-62.

Grazing, rate paid to Forest Department, 31,859-62.

Silage, approved, 21,689-90.

AMANAT ALI, Mr.—*contd.*

CROPS.
Cotton.
Buri, (386), 31,727-31, 31,771-2.
Capable of resisting "wilt," introduction desirable, (386)
Personal experience, manuring, yield, etc., 31,763-9.
Roseum, results of (386), 31,732-4, 31,757, 31,863.
Damage by wild animals, means of preventing, (387), 31,773-6, 31,806-14
Improvement of existing crops
by Agricultural Department, (386).
Wheat capable of resisting rust, introduction desirable, (387).
Wheat farm in Melghat taluq of Amraoti district should be established, (387).
Lucerne, personal experience of, 31,704-6
Lucerne and clover, suggestions for, (387)
Seeds, distribution of
to Local growers personally, 31,696-8, 31,789-91, 31,825
Seed depots, suggestion *re* establishment of, (387).
through Seed farmers who obtain seed from Government farms, approval of system and extension advocated, (387)
Wheat
Beardless varieties damaged by wild animals, 31,723
Personal experience, 31,693-5, 31,725.

CULTIVATION, ploughing system, 31,861-8

DEMONSTRATION
growing Demand for advice and help on part of cultivators, 31,710.
to Groups of small cultivators the best method, 31,849
Inadequate number of demonstrators, 31,701-3

EDUCATION, AGRICULTURAL
Demand for, among educated men, 31,815-7
Poona College, experience of, and opinion *re*, 31,646-55, 31,714-6

FERTILISERS
Artificial, in dry farming, cost not compensated for by increase in yield, (386), 31,832-8
Cowdung
Plastering of walls with, 31,794
Use as fuel, proposed measures for discouragement, (386), 31,770
Popularisation of new and improved fertilisers, proposals, (386).

FINANCE, *Taccavi* loans, proposed modifications of system, (386), 31,692

FUEL, obtaining of, from Forest Department, 31,795-9

IRRIGATION by wells, personal experience, 31,638-42, 31,717-22

MARKETING:
Cotton, 31,656-69, 31,754-6
Grain, 31,674-5
Vegetables, 31,678-83
Wheat, 31,670-3.

MIDDLE CLASS AND EDUCATED MEN, scope for training of apprentices by, 31,850-1.

STATISTICS, COLLECTION
trained Agriculturists should be appointed as *Patwaris* or duties transferred to Agricultural Assistants, (388)
by *Patwaris*, defects of system, (388), 31,738-40.

VETERINARY
Assistants, demanding of fees by, (387), 31,844-7.
Civil Veterinary Department, control by Agricultural Department advocated, (387)

AMANAT ALI, Mr.—*contd.*
VETERINARY—*contd.*
Contagious diseases, trained agriculturists should be appointed as *Patwaris* and Revenue Inspectors, (387-8).
Dispensaries:
Staff, suggestion *re.* (387).
full Use not made of, and reasons, (387), 31,713.

Animal Husbandry:
Brahmani bulls should not be discouraged, *Pande* (534), 33,498-9.
Buffalo:
Cow preferred by small cultivators, *Dwarkanath Singh* 32,880-1.
Cultivation with, difficulty in connection with, *Dubey* 28,549-51.
Bullocks, working and trotting, proposed development, *Khaparde* (404).
BULLS
Castration
Difficulcy with castes accustomed to carry out work, *Wilson* 31,029-30.
Increase in number largely due to introduction of Italian method, *Irwin* 31,316-7.
Legislation, proposal, *Dubey* (106), 28,680.
People should be trained to carry out, *Dubey* 28,681-2
Progress, *Wilson* 31,027.
Purchase of, at high cost from foreign countries, objections to, *Sahasrabudhe* (463).
Reared on Government farms, insufficient number and expansion of work needed, *Dubey* (106).
Camels, province not suitable for, *Watt* 30,404-7.
Condition of cattle, *Powar* 28,409-13; *Dubey* 28,495, 28,741-3, *Wilson* 30,954, *Irwin* 31,117-8, 31,231.
Conditions in Jubbulpore and Hoshangabad as regards fodder and pasture, *Pande* 33,464-9.
Control by Civil Veterinary Department rather than Agricultural Department desirable, but not suitable in Central Provinces, *Wilson* 30,929-36, 31,051-8.
Cows:
well Fed when giving good quantity of milk, *Allan* 29,654, 29,697
Feeding of, *Pandeya* 28,817-24, *Amanat Ali* 31,856-62; *Bhargava* 32,334-44, *Pochory* 32,949-55
Number decreasing, *Pandeya* (126), 28,798-800.
Prohibition of slaughter of, advocated, *Pande* (534).
DAIRY INDUSTRY
Breeds used, *Plymen* 27,676-8.
Dairies in each district, proposal for, *Khaparde* (405).
under Deputy Director in charge of Animal Husbandry and Principal of Agricultural College, *Plymen* 27,671.
Encouragement, proposed measures, *Bhargava* (429).
Ghi.
Import and adulteration of, must be stopped, *Pande* (534).
Shortage of, *Pandeya* (126)
Improvement
Desirable and possible on co-operative lines, *Plymen* (31).
Importance of betterment of stock for, *Plymen* (31), *Allan* (207).
Need for, and suggestions, *Korde* (319), *Khaparde* (404-5)
Proposals for, *Allan* (207).
Milk:
Adulteration of, with water must be stopped, *Pande* (534).
from Buffalo *v.* cow, *Plymen* 27,673-5.
Consumption of, and products, by vegetarian population, importance of, *Allan* 29,655-6.
Shortage of, *Pandeya* (126).
Supply, Nagpur, system, *Plymen* 27,672-3.
Opening of farms for every group of 40 or 50 villages, suggestion, *Pandeya* (126).
Produce, consumption by cultivators, and physical effects, *Plymen* 27,687-94.
Deterioration of cattle, causes, *Pandeya* 28,825.
Excessive number of inferior cattle, *Plymen* 27,934, *Irwin* 31,231.

Animal Husbandry—*contd.*

FEEDING :

Conditions, *Dubey* 28,491-4.

Cows, *see that title above.*

Inadequacy of, owing to apathy, *Irwin* 31,232-5.

FODDER

Analysis of, and determination of nutritive constituents, proposal, *Dokras* (483), 32,652-9.

Baled grass from forests, *see under* Forests

Cakes, use of, *Plymen* 27,817-21

Combination of feeds, proposal, *Dokras* (483-4), 32,652-9.

Dry

Deficiency in cotton country sometimes, *Plymen* (31).

Dry grass, shortage, *Bhargava* (429)

Export, prohibition advocated, *Pande* (534) 33,519-29.

Grass supply, suggestion for improvement of railway facilities, *Korde* (319)

Hay from Government forests, supply available and need for utilisation of, *Irwin* (345)

Insufficiency of, *Korde* (319)

Storage of, *Dokras* 32,523-5.

Straw supply would increase with increase in out-turns of crops, *Dubey* (106)

Sufficiency in tracts where wheat and rice main crops, *Plymen* (31)

Sufficient but for use by valueless cattle, *Allan* (207)

Wheat chaff, export to United Provinces, *Bhargava* (429)

Feeding of cattle during periods of scarcity, *Plymen* 28,192-5.

Grass, no lack of, *Allan* 29,708

Green

Absence of, in dry seasons, *Plymen* (31), *Khaparde* (405)

Difficulty of remedying, *Dubey* (106), *Allan* (207-8)

Encouragement of cultivation

Irrigation tanks, proposal, *Bhargava* (429), (430).

Needed, *Pande* (535)

Preservation of, in pits, suggestion, *Khaparde* (405).

Shortage in dry seasons, *Bhargava* (429).

Growing of *Plymen* (29), *Bhargava* 32,334-6

Cultivation of better fodder crops on systematic lines advocated, *Pande* (537)

Cultivators might be persuaded to take up, if economically sound, *Plymen* 27,683, 28,199-200, 28,202

Difficulties in connection with, *Pande* (532), 33,415-6

Experiments with, *Plymen* 27,935-6

Introduction of new fodder crops, need for, *Bhargava* (428)

Personal experience, *Bhargava* 32,212-7.

Remission or reduction of revenue for, question not considered, *Plymen* 27,695.

Trials of, on Government experimental and demonstration farms advocated, *Dubey* (104).

Improvement of supply, proposed means, *Plymen* (20), *Dubey* (106); *Khaparde* (405); *Bhargava* (430), *Pande* (535)

Juar

Increase of area under, suggestion, *Allan* (207).

Reservation of part of land for growing, and storing of, in pits, proposal, *Khaparde* (405).

Tried but unable to withstand rainfall, *Pande* 33,235.

Use of, *Pochory* 33,109-12

Lucerne, not profitable for draught cattle, *Pande* 33,236.

Mineral constituents

Absence of, deterioration of cattle owing to, *Khaparde* (405).

Absence of, research in central institute and provinces desirable, *Plymen* (31).

Insufficient and salt tax should be abolished, *Pande* (535).

Manufacture of local salts should not be discouraged, *Pande* (535).

Animal Husbandry—*contd.*

FODDER—*contd.*

Mineral constituents—*contd.*

Salt duty a discouragement of feeding with salt, *Khaparde* (405).
Position *re*, *Plyman* (18).
Problem of, *Plymen* (20).
Reserves, system, *Powar* 28,439-40.
Sann hemp, special concessions proposed to encourage growing of, *Pande* (535).
no Scarcity except in Berar, *Witt* (278).
no Scarcity in Jubbulpore Division, *Irwin* 31,166-9.
Shortage, *Pande* 33,233, *Pandeya* (126), 28,800-5, *Pochory* 32,934-5.
Seasons of, *Plymen* (31), *Dubey* (106); *Korde* (319), *Pande* (535), *Khaparde* (405), *Bhargava* (429), *Dwarkanath Singh* 32,875-6.

Silage

Approved, *Amanat Ali* 31,689-90
no Belief in system, *Deshpande* 30,502-4.
Better than dry grass in relation to milk-yield, *Bhargava* 32,255
Compulsory use of, at Government farms advocated to demonstrate advantages of, *Dokras* (484), 32,526.
Demonstration at Nagpur college dairy farm, *Allan* 29,904-5.
Engine needed for making, *Dokras* 32,527.
Experience with, *Bhargava* 32,240-3.
careful Investigation, need for, *Plymen* 27,684-6.
Making of, never tried in forests, *Witt* 30,296.
Obstacles in way of general adoption, *Plymen* (88 ii).
Operations, results and prospects, *Plymen* (88 i-88 ii).
Personal experience, *Pochory* 32,936-42, 33,021-7, *Pande* 33,304-16
Possibilities, *Allan* 29,709-13.

Stall feeding, *Allan* 29,698-9
Question of extension, *Witt* 30,363-4.
the Remedy for excessive grazing, *Witt* (277)

Supply, *see also under* Forests
Thornless cactus, growing of, proposed, *Khaparde* (405)
Transport of, special facilities and concession rates advocated, *Korde* (318), 30,884-5
Wheat straw, export to United Provinces, *Pande* (534)
Forest areas for cattle breeding, proposal, *Plymen* (33), 27,718, 28,201.
Gaurakshans, *Wilson* 31,013-8.
Government stock-breeding, defects of, in the past, *Allan* (206)

GRAZING

Area available, statistics, *Plymen* (31).
Conversion of good pastures into fields, *Pande* (534).
Encroachment on village pastures should be severely dealt with, *Pande* (535), 33,526.
Exemption of land from land revenue proposed, *Pande* (535).
Excessive, stall feeding the remedy, *Witt* (277).
in Forests, *see under* Forests.
Grass borders in tilled fields
Care of, should be left to cultivator, *Dubey* (106).
Cutting down of area, *Plymen* (31), 28,196-8, *Allan* (207), *Pande* (534).
Generally negligible, *Irwin* (345).
Other means of maintaining cattle needed, *Khaparde* (405).
Grass should be grown for, *Pandeya* (126)

Animal Husbandry—*contd.*

GRAZING—*contd*
no Land reserved for pasture by cultivators, *Pochory* 33,050-3, 33,089-94.
Overstocking of common pastures: *Plymen* (31); *Allan* (207); *Irwin* (345), *Khaparde* (405), *Bhargava* (429).
Position re, *Pande* (534), 33,470-2.
Prevention, suggestions for, *Dubey* (106).
Remedy prevented by prejudice against elimination of unfit cattle, *Irwin* (345).
State action necessary to prevent, *Allan* (207).
Pasture land, proposals for maintenance in villages, *Pande* (535).
Reservation of pasture lands for, advocated, *Pandeya* (126).
Importation of cattle, *Irwin* 31,116.

IMPROVEMENT OF BREEDS
Breeding of bullocks rather than bulls, proposal, *Allan* 29,653.
Breeding farms *Sahasrabudhe* (455), (463).
Opening of, for every group of 40 or 50 villages, suggestion, *Pandeya* (126).
not Paying, *Pande* 33,462.
should be Started by Agricultural Department in every district and bulls be supplied to cultivators on premium system, *Pochory* (517).
Buffalo, importance of, *Khaparde* (404).
Cattle-breeding and dairy farm, forthcoming establishment at Ellichpur, *Sahasrabudhe* (463)
Cattle breeding industry in Mandla formerly, *Irwin*, 3116, 31,223-5.
Cattle breeding co-operative societies, *see under* Co-operation.
Extension of work, need for, and proposals, *Plymen* (19-20).
Financing of, suggestion, *Allan* 29,652.
Food supply the limiting factor, *Allan* 29,702-4.
Importance of, *Plymen* (18), *Pande* (534).
Large scale pure breeding at five centres, proposed policy, *Allan* (206).
Measures to be undertaken by Department, *Plymen* 27,794-800.
Milch cows, need for, *Khaparde* (404).
Need for, and suggestion, *Bhargava* (429).
Particulars re operations and present position, *Plymen* (19), 27,679-82, *Allan* (211-5).
proposed Policy, *Allan* (206-7), (211-9).
Proposals framed for, *Plymen* (30).
Scope for, and suggestions, *Khaparde* (404).
by Selective breeding, *Dubey* (106).
Services of bulls of good breed in group of 50 villages, proposal, *Pande* (534)
Stud bulls from Government farms, increased number needed, *Dubey* (102), 28,487-90.
Suggestions, *Dubey* (106).
Improvement in cultivation dependent on improved cattle, *Plymen* (18).
Improvement of existing practice, need for, *Bhargava* (429).

INTEREST OF LANDOWNERS IN:
Extent of, and question of extending, *Allan* (208).
Means of encouraging, *Plymen* (32); *Khaparde* (405); *Pande* (535).
Interest of landowners and cultivators in will only result if profit to be made, *Irwin* (345).
Jubbulpore Division, position as regards cattle, *Irwin* 31,219-25
Lack of interest in, on the whole, *Irwin* 31,114-9.
Limitation as to number of extra cattle kept by cultivator, proposal, *Dubey* (106), 28,651-9
Meetings of cultivators, proposal, *Dubey* (106).
Operations, *Dwarkanath Singh* 32,805-12.
Prizes to cattle breeders, continuance and development of system advocated, *Sahasrabudhe* (463).
Professional cattle breeders, *Dubey* 28,745-8.

Animal Husbandry—*contd.*
Slaughter of milch cattle and other agricultural cattle should be prohibited, *Pande* (537).
Statistics, *Plymen* (18)

Basket Making, *see under* **Agricultural Industries.**

BECKETT, R. H., Officiating Director of Public Instruction, Central Provinces (368-372), 31,401-31,619

EDUCATION
Adult
little Demand for, 31,404, 31,405, 31,409, 31,518-26
Demand should be created if possible, 31,409
Experiments made in connection with, and failure of, but education of children of more importance, 31,404-5, 31,409, 31,496-8, 31,518-26.
in Jails, extension of, experiment under consideration, 31,527
Agricultural
in High schools in towns, undesirable, (369)
as Matriculation subject, failure of experiment, and disapproval of, 32,600-3
in Ordinary schools, considerations in connection with, (368)
Powerkhera school, Hoshangabad, vocational course, 31,420
in Vernacular middle schools, suggestions for introduction of, 31,453-4
Vocational, must be in specialized institutions, (368), 31,422.
Agricultural mottoes might be introduced into rural schools, 31,554-7
Board composed of Directors of Public Instruction, Co-operative Credit, Public Health and Agriculture, might be useful, 31,492.
Chemistry and physics, provision of equipment, 31,595-9
Demand for, 31,433-6, 31,447-8
Depressed class boys, treatment of, in schools, 31,563-6
Depressed classes, attitude of, 31,503-4
Director of Public Instruction, also Secretary to Government in the Education Department, and advantages of, 31,455-60
Female
Government schools, 31,589
Literacy, low percentage, 31,583-5
Primary slowness of progress and steps being taken to encourage, 31,410-4.
Secondary, progressing, 31,410
Teachers, problem of, and supply, 31,586
Garden plots in rural middle schools, suggestions re, (369).
High School Education Board, composition, and functions, 31,493, 31,495
High Schools
Manual instruction, 31,561-2
Scale drawing, 31,558-60
Situation in towns, 31,616-9
Higher or collegiate, influence on agricultural efficiency, (369)
Illiteracy, lapse into, and importance of suitable village libraries and propaganda work, (369), 31,406-8
Indian boys, powers of observation, question of, 31,516, 31,604-5
Middle schools, influence on agricultural efficiency, (369)
Nature study
in Rural middle schools, (368).
Teachers, difficulty of obtaining right type, 31,415-8
Normal schools, 31,419, 31,485-91.
Primary.
Classes of schools, 31,588-91.
Compulsory:
Extent of, method of working and results, (369-70), 31,425-6, 31,429-32, 31,470-2, 31,505-11, 31,537-46.
entirely Free, small fee charged for optional education, 31,437-42

BECKETT, R. H.—*contd.*

EDUCATION—*contd.*

Primary—*contd.*

Importance of, 31,425-32

Management and inspection of schools, 31,478-81, 31,611-2.

in Municipalities, 31,425, 31,609-10.

Establishment, survey made of needs and policy re, 31,499-500.

Financing of, 31,449-52, 31,515, 31,591-4.

Free compulsory education, definite policy of, 31,468-9

Functions of, and removal of illiteracy must be chief aim, (368).

Holidays, coincidence with busy season in fields in many areas, 31,606-8.

Influence on agricultural efficiency, (369).

Leakage between second and fourth classes, (370), 31,511-4.

Teachers

Class of, and qualifications, 31,533, 31,534-6

Pay, 31,416-8, 31,474-5

Pension or provident fund, 31,482.

Training of, 31,483-91, 31,530-2

Vernacular primers, 31,613-5.

Scholarships for special training in England and results, 31,567-74.

School plots in rural middle schools, (368), 31,548-53

Sciences, extent of, 31,463-7

Secondary teachers, qualifications, 31,533

University, graduates, after careers, 31,578-82

Vernacular middle schools

Financing and control of, 31,449-52, 31,495

Number increasing, 31,494.

Bee-keeping, *see under* **Agricultural Industries.**

Berar, agricultural conditions in, (460-1), 32,428

BHARGAVA, Shyam Sundar, Managing Proprietor, Messrs. Chandrabhan Behari Lall, Jubbulpore: (427-430), 32,123-32,354

ADMINISTRATION

Meteorological Department, services satisfactory, but not used by villagers, (427).

Posts, facilities fair, (427).

Railway freights, cultivators' prosperity injured by, and change advocated, (430).

Roads·

Improvement and extension needed, (427).

few Metalled roads, Jubbulpore district, 32,289

Telegraphs, facilities fair, (427).

AGRICULTURAL DEPARTMENT, services fair, (427).

AGRICULTURAL INDEBTEDNESS

Causes, (427)

Credit, sources of, (427).

Lending of money to own cultivators, 32,176-7, 32,307-11.

Measures for lightening burden of debt, (427).

Mortgage and sale, objection to restriction of right of, (427).

Repayment, causes preventing, (427).

not Serious on witness' estates, 32,186.

Usurious Loans Act, application advocated, (427), 32,330.

AGRICULTURAL INDUSTRIES·

Bee-keeping, poultry, sericulture and lac culture and basket making, caste prejudice an obstacle, (430).

Fruit growing, difficulty for lack of roads, water supply and unsuitable climatic conditions, (430)

Intensive study of rural industries advocated, (430).

Preparation of agricultural produce for consumption, establishment by Government desirable, (430).

BHARGAVA, Shyam Sundar—*contd.*

AGRICULTURAL INDUSTRIES—*contd.*
Removal of industrial concerns to rural areas, not advocated, (430).
Subsidiary industries proposed, (430).
Time spent by cultivators on holdings, (430).

AGRICULTURAL LABOUR.
Shortage owing to epidemics, and poverty owing to uneven employment on agricultural operations, (430).
Wages in cash and in kind, rates, 32,317-21.

ANIMAL HUSBANDRY:
Cows, feeding of, 32,334-44.
Dairying industry, proposed measures for encouraging, (429).
Fodder:
Dry:
Dry grass, shortage, (429).
Wheat chaff, export to United Provinces, (429).
Green:
Encouragement of cultivation under irrigation tanks, proposal, (429).
Shortage in dry seasons, (429)
Growing of, 32,334-6.
Improvement of supply, proposed means, (430).
Shortage, season of, (429).
Silage
Better than dry grass in relation to milk-yield, 32,255.
Experience with, 32,240-3.
Grazing, overstocking of common pastures, (429).
Improvement of breeds, need for, and suggestion, (429).
Improvement of existing practice, need for, (429).

CAPITAL, means of attracting, (430).

CHANDRABHAN BEHARI LALL, MESSRS.:
Animal husbandry operations, 32,240-60, 32,334-46.
Experimental farm run by, particulars *re* work, staff, etc., 32,143, 32,146-56.
Particulars *re* farming operations of, and conditions on estate, 32,125-268, 32,282-6, 52,301-54

CO-OPERATIVE CREDIT SOCIETIES, closing down of, on witness' estates, 32,178-84, 32,310.

CROPS
Damage by wild animals, proposed methods of prevention, (428).
Fodder, personal experience, 32,212-7.
Improvement of existing crops, by selection and importation of better varieties proposed, (428)
Introduction of new fodder crops, need for, (428).
Rice, personal experience, 32,168.
Seeds:
Distribution, importance of work, (428).
Improved, lending of, to cultivators on *sawai* system, 32,173-5, 32,196-7.
Successful introduction of, examples, (428).
Sugarcane, CO. 210, experience of, 32,301-3.
Wheat
Bearded *v.* unbearded, 32,261-2, 32,266-7.
Cost of cultivation per acre, 32,324-8.
no Fertilisers used by witness, 32,157-8.
Personal experience, 32,142-67, 32,353-4.
Pusa, results compared with local varieties, 32,304-6.
Rotation with, 32,159-65.
average Yield per acre, 32,166.

CULTIVATION:
Rotation of wheat with masur, peas or gram, desirable, Jubbulpore district, (429).

BHARGAVA, Shyam Sundar—*contd.*

CULTIVATION—*contd.*
Tillage systems, improvement, need for, and proposed methods, (428).

DEMONSTRATION AND PROPAGANDA
Field demonstrations, proposed measures for increasing effectiveness of, (427), 32,268
Measures for inducing cultivators to adopt expert advice, (427)
Measures found successful in influencing and improving the practice of cultivators, (427).

EDUCATION
Nature study, agriculture and gardening should be taught from beginning, (430)
Primary, teachers, pay and qualifications and method of appointment, 32,292-7.

FERTILISERS
Ammonium sulphate, successful use on sugarcane, (428)
Cattle urine, pits round villages for collection of, should be compulsory, (428).
Cowdung
Pits round villages for collection of, should be compulsory, (428)
Use as fuel to small extent only in Jubbulpore district, (428)
Natural manures
Increased use of, scope for, (428).
Pits round villages for collection of cowdung, rubbish and cattle urine should be compulsory, (428).
Popularisation of new and improved fertilisers, free demonstration on cultivators' fields proposed, (428)

FINANCE
Agricultural (land mortgage) banks on co-operative lines, establishment advocated, (427), 32,223-9.
Government should give loans more freely, (427)
Taccavi loans
Advisory Committee appointed in each district or Tahsil to advise at time of giving and realising would increase popularity of, (327)
Unpopular, (427)

FORESTS
Fuel, supply, 32,218-22
Grazing
Concessions should be increased, (430)
Cultivators should be allowed to cut grass free where grazing not allowed, (430)

HOLDINGS
Consolidation, revenue officers should have instructions and power to compel, by exchange, (428)
Fragmentation
Drawback of, 32,349
Stopping of, no suggestion for, (428)
Legislation dealing with minors, etc., not possible, (428)

IMPLEMENTS
Distribution, obstacles in way of, (429)
Improved, methods for hastening adoption
Demonstration of implements and sale on hire purchase system, (429).
Repair centres, (429)
New, proposed introduction:
Light harrow for work in beginning of monsoon, (429).
Seed drills, (429).
Reapers, (429).
Threshing machine, (429).
Steam tackle outfit for ploughing, use of, and results, 32,269-75.
Tractors, non-success with, 32,272, 32,286.

BHARGAVA, Shyam Sundar—*contd.*

IRRIGATION:
Canal, Pariat irrigation scheme, irrigation of sugarcane from, personal experience, 32,134-8.
Obstacles to extension of, slackness on part of Government to sanction schemes, (428).
Perennial and non-perennial canals in wheat and rice tracts, extension advocated, (428).
Tanks
Inefficiency of, in Jubbulpore district for wheat irrigation, 32,265.
in Wheat and rice tracts, extension advocated, (428).

LAND TENURE.
Occupancy rights, should be transferable after certain period, 32,226, 32,316.
Rent, system of fixing by settlement officer, 32,332.

LANDOWNERS, discouragement of, from carrying out improvements, (430)

LEGISLATIVE COUNCIL, attitude towards agriculture, 32,312-6

LOCAL BOARD, Jubbulpore, revenue, and expenditure mainly on education, 32,288-90.

MARKETING
Grain, 32,187-210.
Information to cultivators, merchants and traders as to market conditions, etc., through Agriculture Magazine or weekly papers, suggestion, (430).

RESEARCH:
Government of India should send experts to study conditions in each Province, (427).
Scientific staff of Government of India, increase, would be useful, (427).

SEA FREIGHTS, prosperity of cultivators injured by, and change advocated, (430).

SOILS.
Cultivable land gone out of cultivation, proposed measures for reclamation, (428).
Improvement by Bhandhwas system, with subsequent deterioration after about thirty years, (428).

VETERINARY:
Civil Veterinary Department, control by Director of Agriculture advocated, (429)
Contagious diseases
Propaganda recommended, and failing success, legislation, (429).
Serum, no shortage, (429).
Dispensaries.
under Control of District Boards nominally but Board has insufficient control, (429).
Expansion not adequate, (429).
too Far from villages, (429), 32,234-7, 32,278
Transfer to Provincial authority not advocated, (429).
Treatment and medicines too expensive, (429)
Used generally only for inoculation and castration, 32,236.
Indigenous methods, use of, 32,233-4, 32,280-2
Preventive inoculation:
no Fee charged, (429).
becoming Popular with people, 32,238-9.
Propaganda necessary, (429).
Service, control by Agricultural Department should be increased, (427), 32,278.
Simpler methods and medicines should be used, (427).

BRAHMA, Rao Bahadur K.V., B.A., LL.B., M.B.E., President, Berar Co-operative Institute, Ltd., Amraoti. (241-50), 29,906-30,169.

AGRICULTURAL INDEBTEDNESS:
- Average indebtedness per acre, etc., 30,028-33.
- Causes of, (243-4), 29,945-7, 30,066-7.
- Credit, sources of, (244), 30,084-6.
- "*Damdopat*" rule should be applicable to persons and in all cases, (243), 29,939-44, 30,045, 30,048, 30,164-8.
- Deccan Agriculturists' Relief an unnatural measure and failure of, 30,046-7.
- Increasing, 30,027, 30,036-7
- proposed Measures for preventing, (243), (244).
- Moneylenders, keeping of accurate accounts on paged books, compulsion would not be objected to, 30,087-8.
- Repayment, causes preventing, (244).
- Usurious Loans Act, difficulty of operating, 30,048.

AGRICULTURAL INDUSTRIES.
- on Co-operative basis, possibility, 30,000.
- Cotton gins, worked with oil engine, establishment of, in villages, proposal, (245)
- Hours of work by average cultivator during year, (245), 30,137-9.
- Industrial concerns, removal to rural areas, advantages to be derived, (245).
- Poultry farming, prejudice against, among Hindus, 29,951
- Rope making, no prejudice against, 29,950
- Subsidiary industries, suggestions, (245), 29,949-51

CO-OPERATION
- Advantages of, (245).
- All-India Co-operative State Apex Bank, proposal, (246), 30,020.
- Assistance of movement by District Boards, extent to which possible, 30,008-9.
- Banks, need for, facilities for re-discount to, (246), 30,094.
- Berar Co-operative Institute:
  - Investigation of economic condition of societies by, 30,022-6, 30,119-20.
  - Working of, (247), 29,956-7
- Board of Co-operation for advice to Minister, scheme, (246), 29,953
- Central Banks
  - Concentration of attention on making a few societies model societies, proposal, (247)
  - Development of work, proposals for, (247)
  - Management of, and position of shareholders, 29,985-7.
  - Power of recommending suspensions and remissions of land revenue advocated, (247), 29,954-5.
  - Staff, proposal re, (247)
  - Use of money for financing purchase of cotton by big firms, proposal, (249), 29,966-7
- Circle auditors, recruitment, 30,061-2.
- Comparison of position with Punjab, 30,038-9
- Credit Societies
  - Applications for, and issue of, loans, procedure, 29,988-9.
  - Development of work, proposals for, (248-9), 29,965, 30,099-101.
  - Distribution of seeds through, proposal, (244).
  - Effect on moneylenders' rate of interest, 30,140-2
  - Members:
    - no Case of expulsion known, 30,005-7
    - Class of, 30,059-60, 30,133-4
  - Rate of interest, approved, 29,993.
  - Results, (250).
  - Supervision by Central Banks, not objected to at present, 30,003.
  - Use of loan for non-productive purposes, occasional cases, 30,004.
  - Working of, (247-8).
- Development associations for taluks scheme, (247).
- Education of members in principles of co-operation, 30,001-2, 30,095-7

BRAHMA, Rao Bahadur—*contd.*

Co-operation—*contd.*
Education and propaganda, proposed measures, (247).
Encouragement of growth of, steps proposed for, (245), (247), 30,056-8.
Government assistance in crisis of 1920-21, 30,020-1.
larger Government expenditure desirable on, (245).
Imperial Banks should be enabled to place money at disposal of, (246).
Joint farming societies.
Proposals for, (249).
Want of mutual confidence an obstacle, (249)
Lessons on, in schools and colleges, advocated, (247).
Non-official agencies.
Extent of assistance received from, 30,053-8
Grants-in-aid advocated, (246).
Propaganda and demonstration might be more carried out through, 29,995-6
Registrars and Assistants:
Assistant Registrar in charge of Berar, proposal, (245).
Indians advocated as, (245), 30,090
Leading of deputations of non-officials to sister provinces, proposal, (246).
Study leave to gain acquaintance of movement in foreign countries, proposal, (246)
Sympathy and help of officers of Department of Agriculture and Department of Revenue, desirability of, (246)
Whole-time Registrar advocated, without frequent change, (245).
Savings Banks, proposed experiment of, (246)
Scholarships to students to study movement abroad, proposal, (247).
Societies
for the Co-operative use of machinery
Essentials of success, (249)
Scope for, (249).
to Decide disputes, formation suggested, (249), 30,089
for Reducing ceremonial expenditure or abandoning expensive social customs, proposal, (243), (247), (249), 30,042-4, 30,114
for the Sale of produce
Steps necessary to meet competition of "Adtyas" or commission agents, (249), 29,968-84, 30,143-4
Working of, (249), 29,968-84, 30,143-4
Staff, training and refresher courses, importance of, and proposals, (246).
Subordinate officers, training of, 30,049-52
Taluq Development Associations, proposal, (247), 30,121-5
Village societies, annual meetings advocated, (247), 29,958-64

Crops, distribution of Seeds
through Co-operative credit societies, proposal, (244)
Department should establish licensed sellers for sale of good seed at fixed rates, (244)
Stores on co-operative basis should be organised as far as possible, (244).

Cultivation, of fields on leases, reckless, (244), 29,945

Demonstration and Propaganda
Field demonstrations, department should undertake work with motor tractors at cheaper rates than with old methods to demonstrate advantage of, (242).
Methods of inducing cultivators to accept expert advice, (242), 30,110-13
Popularisation of use of machinery through demonstrations and shows, etc., (242).

Education:
Adult, Mr. Manday's method, 29,920-3.
Means of popularising, (242).

BRAHMA, Rao Bahadur—*contd*

EDUCATION—*contd.*

Agricultural

Development of, in village schools, scheme for, and probable cost, (242)

Extension of facilities in Berar advocated, (241).

Incentive, Government service, (241).

in Primary and vernacular middle schools, possibility, (241)

no Schools for agricultural teaching in the moffusil, (241).

Short courses in, where experimental or demonstration farms available, advocated, (241)

Teachers

for Boys, inadequate supply, (241)

Class, (241).

Course of agricultural education before appointment in rural areas, proposed in some cases, (241), 30,108-9.

Drawing of, from rural classes, desirable, should not be insisted on, 30,063-5

among Villagers, of main importance at present, (241)

Criticism of, by parents, (250), 30,145-6

Nature study

in Fields desirable, and school plots and farms desirable, (241), 30,151-2

in Schools, of little value, (241), 29,916, 30,151

Primary

Agricultural operations, experiment tried, but failure owing to lack of proper type of teachers, (241), 29,910-4.

Compulsory, extent to which put into force and reasons for slow progress in Berar, (250), 30,128-32, 30,147-9

Education not designed to fit boys for work in fields or create agricultural bias, (241)

Small proportion of boys passing through fourth class, reasons, (250)

Rural economics should be studied in University and results taught in primary and secondary schools, (247)

FERTILISERS

Cattle urine, preservation of, for manurial purposes, proposal for regular and continuous propaganda to encourage, (244).

Cowdung, use as fuel and means of prevention, (244), 30,135-6, 30,169

Natural manures, scheme for conservation of, (244)

FINANCE

Advances

through Co-operative Societies and realisation of amount so advanced as arrears of land-revenue scheme, (243).

from Government treasuries, scheme, (243).

cheap Credit, dangerous without proper supervision, 29,994.

Imperial Bank Act, proposed amendment, (243), 29,927-31.

Indian Trust Act, proposed amendment, (243).

Interest on advances, fixing of statutory maximum rate, proposal, (243), 30,083, 30,117-9

Land Mortgage Banks.

Establishment advocated, (243), 29,924-6

Government assistance, proposal, (243), 29,927-31, (246), 30,091-3.

Resolution of Conference of Registrars of Co-operative Societies, January 1926, should be given effect to, (243), 30,040-1.

Short term loans, establishment of village Co-operative Societies advocated, (243).

Taccavi loans, to Co-operative Societies' members, agency of Co-operative Central Bank and Societies should be employed, (246)

Village banks, formation of, and exemption from Indian Companies Act under certain circumstances, proposal, (243), 29,932-8, 30,068-82, 30,115-6, 30,153-7.

BRAHMA, Rao Bahadur—*contd*

HOLDINGS:
Consolidation:
Arbitration Societies, establishment of, as in the Punjab, advocated, (244).
through Co-operative movement might be possible, 29,997-9.
Judicial Village Panchayats for settlement of money claims and leasing of money suits, proposal, (244).
Legislation:
for Keeping disputes out of court, advocated, (244).
in Respect of widows with life interest, advocated, (244).
Suits filed after 12 years by reversioners claiming estate after widow's death should be barred, (244)

IMPLEMENTS
Improved
Ploughs, introduction, 30,112-3
Popularisation of, (244), 30,157-61.
Obstacles to introduction, repair difficulty and need for establishment of centres for supply of spare parts and repair work, (242).

JUDICIAL ADMINISTRATION, difficulty in cases of auctions of lands, 30,106.

LAND REVENUE, Berar Land Revenue Code, proposed amendment, (248), 29,965, 30,102

MARKETING
Cotton, (249), 29,968-84, 30,143-4
Weights and measures, cotton, platform scales should be insisted on, (249), 29,968-70.

MIDDLE CLASS YOUTHS, means of making agriculture attractive to, (241), 30,150-2.

ROADS.
Construction and maintenance by Government and by District Councils, defined policy advocated, (242-3).
under District Boards, funds insufficient for maintenance, 30,010-15.
Inadequacy of, in Berar, (242)
Village
Neglect of, and proposed remedies, (242-3)
Repair, compulsory supply by every adult of one day's labour for, proposal, (242), 30,016-9.

WELFARE OF RURAL POPULATION.
Economic survey in typical villages, necessity of, and proposal for, (250).
Suggestions for improvement, (250), 30,162.

Buffalo, *see under* **Animal Husbandry.**

Bullocks, *see under* **Animal Husbandry** *and* **Cultivation.**

BURTON, G. P., I.C.S., Deputy Commissioner, Raipur, *see* **CHHOTELAL, Mr.**, and **BURTON, G. P., I.C.S.**, 29,094-29,201

Capital, attracting of, to agriculture:
see also Landowners.
Factors preventing men with capital from taking up farming, *Allan* (209).
Profession must be made more profitable, *Plymen* (35); *Irwin* (346), *Khaparde* (407), *Bhargava* (430), *Pande* (538)
Size of holdings not a serious bar in Berar but is in parts of Central Provinces, *Korde* 30,732-5
Steps necessary, *Allan* (210); *Korde* (320); *Dwarkanath Singh* (505)

Cassava, *see under* **Crops.**

Cattle Breeding, *see under* **Animal Husbandry.**

Chandrabhan Behari Lall, Messrs.:

Animal husbandry operations, *Bhargava* 32,240-60, 32,334-46
Evidence on behalf of, *see* Bhargava, Shyam Sundar, (427-430), 32,123-32,354.
Experimental farm run by, particulars *re* work, staff, &c., *Bhargava* 32,143, 32,146-56.
Particulars *re* farming operations of, and conditions on estate, *Bhargava* 32,125-268, 32,282-6, 52,301-54.

CHHOTELAL, Mr., Extra-Assistant Commissioner, and **BURTON, Mr. G. P.** Deputy Commissioner, Raipur, 29,094-29,201

HOLDINGS, CONSOLIDATION OF:
previous Attempts, particulars of, 29,100-2, 29,104-5, 29,108-11.
through Co-operative Societies, not considered likely, 29,129-30, 29,166-7
Demand of cultivators for, 29,119-21.
Legislation necessary to compel obstructive minority to join, and proposal *re*, 29,114-6, 29,947, 29,175-8
Obstacles in way of, 29,136
Particulars *re* work, 29,137-49, 29,153-4, 29,157-60
Proposals, 29,150-201
in Ryotwari villages, proposal and application of, water-course system of irrigation, 29,123-8
Transfer of rights, proposed legislation, 29,112-3, 29,131-5

Clover, *see under* **Crops.**

Contagious Diseases, *see under* **Veterinary.**

Co-operation:

Advantages of, *Brahma* (245)
Agricultural Associations, *Trivedi* 29,263-7
Suggestion for, *Korde* (320)
Average indebtedness per acre, etc., *Brahma* 30,028-33
All-India Co-operative State Apex Bank, proposal, *Brahma* (246), 30,020
Assistance of movement by District Boards, extent to which possible, *Brahma* 30,008-9.
Association of growers of each crop, proposal, *Dokras* (480).
Banking crisis of 1921 and causes of, *Trivedi* 29,446-9.
Banks, facilities for re-discount to, need for, *Brahma* (246), 30,094.
BERAR CO-OPERATIVE INSTITUTE
Investigation of economic condition of societies by, *Brahma* 30,022-6, 30,119-20
Working of, *Trivedi* (170), *Brahma* (247), 29,956-7.
Better standard of living societies, formation proposed, *Dwarkanath Singh* (505).
FOR BETTERMENT OF VILLAGE LIFE
Need for, and suggestions, *Plymen* (34).
Scope for, *Trivedi* (172).
Board of Co-operation for advice to Minister, scheme, *Brahma* (246), 29,953.

CATTLE-BREEDING SOCIETIES
Establishment of, proposals for, *Dwarkanath Singh* (504-5)
Failure of, *Deshpande* (303).
Failure in Central Provinces but should be tried again, and suggestion *re*, *Pande* (537).
in Raipur district formerly, but closure owing to lack of interest, *Trivedi* (172), 29,334-5, 29,575-8.
little Scope for, *Plymen* (34), 28,110.

CENTRAL BANK
Activities should be confined to education, training and propaganda, *Pande* 33,403.
Akola, crisis owing to want of funds as result of bad years, *Korde* 30,704-11, 30,777-9, 30,802-4

Co-operation—*contd.*

CENTRAL BANK—*contd.*

Concentration of attention on making a few societies model societies, proposal, *Brahma* (247).

Control over, extent of, *Trivedi* 29,349-57, 29,359-62.

Deposits, *Trivedi* (172).

Development of work, proposals for, *Brahma* (247).

Directors, *Trivedi* 29,530-2, 29,568-9.

Dividend, *Trivedi* 29,497.

Inspector, class of man, etc., *Trivedi* 29,457-61.

Loans by, no supervision over use of, *Sahasrabudhe* (468).

Local bodies should be allowed to keep money in, *Pande* (537)

Management of, and position of shareholders, *Brahma* 29,985-7

Managers, class of men, etc., *Trivedi* 29,454-6.

Number, *Trivedi* (168).

Particulars *re*, working of, etc., *Trivedi* 29,336-57

Power of recommending suspensions and remissions of land revenue advocated, *Brahma* (247), 29,954-5

Rate at which loans lent to primary societies, *Sahasrabudhe* 32,463

Relations with Provincial Bank, *Trivedi* 29,359-61.

Results, *Trivedi* (172)

Staff, proposal *re*, *Brahma* (247)

Supervision of credit societies by, *see under* Credit Societies *below*

Supervision of, by staff not satisfactory, *Dwarkanath Singh* (504)

Use of money for financing purchase of cotton by big firms, proposal, *Brahma* (249), 29,966-7

Circle auditors, recruitment, *Brahma* 30,061-2

Comparison of position with Punjab, *Brahma* 30,038-9

Compulsory education, formation of societies desirable *Trivedi* (172), 29,436-7

Consolidation of holdings, *see under* Holdings

Consumers' societies, suggestion *re* linking up with producers' societies, *Peterson* (445-6), 32,397-8

Control of Co-operative Department by specially trained whole-time officer, proposal, *Plymen* (34), 27,745-8

Co-operative Institute for Jubbulpore and Nerbudda Divisions, working of, *Trivedi* (169)

Credit movement, desirability of extension, *Konde* 30,715

CREDIT SOCIETIES.

Accounting and audit, *Trivedi* (169), 29,270-9, 29,285-6, 29,469, *Pande* 33,402

Advances through, and realisation of amount so advanced as arrears of land revenue, scheme, *Brahma* (243)

more Auditors should be appointed and Central Bank not be asked to bear expense, *Pande* 33,403

Bye-law that members should send boys to school, one case of, *Trivedi* 29,616

Closing down of, on witness' estates, *Bhargava* 32,178-84, 32,310

Consolidation of movement, concentration of efforts on, advocated, *Trivedi* (171), 29,262.

Contribution by one society for purchase of quinine, *Trivedi* 29,617

Defects of present system, *Deshpande* (302-3)

Deficit, meeting of, by Government, proposal, *Trivedi* (169).

Degeneration into money-lending businesses, *Dokras* 32,517, 32,566

Deposits, *Trivedi* (172).

Development and improvement of work, proposals for, *Trivedi* (171), *Brahma* (248-9), 29,965, 30,099-101.

Difficulties of, owing to tenancy system, *Pande* 33,326-38, 33,455-61

Distribution of seeds through, proposal, *Brahma* (244)

more Education of, required, *Pande* (537).

Effect on rates charged by moneylenders, *Trivedi* 29,550-2, *Brahma* 30,140-2.

Extension, scope for, *Dwarkanath Singh* (498)

Failure, statistics, *Trivedi* 29,216-7.

Federation subscription levied from members, proposed abolition, *Trivedi* (169).

Co-operation—*contd.*

CREDIT SOCIETIES—*contd.*

Fixing of credit limit, power to Government Auditor proposed, *Dwarkanath Singh* (504).

Joint liability, enforcement

in Certain cases and effect on reputation of movement, ***Trivedi*** 29,218-20, 29,237-8.

Policy *re*, *Trivedi* 29,221-5.

under Liquidation, number, *Trivedi* (168).

Liquidations

Effect on confidence in movement, question of, *Trivedi* 29,392-4.

Policy and procedure, *Trivedi* 29,226-39, 29,374-85, 29,499-504, 29,533-6, 29,588-91

Loans

Applications for, and issue of, procedure, *Trivedi* 29,244-61, 29,450-3, *Brahma* 29,988-91; *Pande* 33,331-8; *Deshpande* 39,476-7.

for Purchase of implements, and joint purchase in one case, *Trivedi* 29,618

Rates of interest, *Trivedi* 29,397, 29,493-4

Approved, *Brahma* 29,993

too High, *Khaparde* (401), *Sahasrabudhe* (459), (460).

no Supervision over purpose of, *Dokras* 32,517, *Sahasrabudhe* (468).

Supervision over use of money advanced, need for, *Sahasrabudhe* (459).

Use of, for non-productive purposes, occasional cases, *Brahma* 30,004.

should be Used for productive purposes, *Dwarkanath Singh* (504)

Value of, *Sahasrabudhe* (460); *Dwarkanath Singh* (496)

Loans from Central Banks, system, *Trivedi* 29,420-2

Member, no case of expulsion known, *Brahma* 30,005-7

Members borrowing both from, and from moneylenders, etc, *Trivedi* 29,287-8, 29,408-10

Members, class of, *Brahma* 30,059-60, 30,133-4

Number, increase desirable, *Dwarkanath Singh* (496).

Organisation, procedure, *Trivedi* 29,398-9

Position of, in Berar, *Khaparde* 31,879

Problem of agricultural indebtedness cannot be solved by, alone, *Dwarkanath Singh* (499)

Reasons for cultivators borrowing from moneylenders rather than from, *Khaparde* (401)

Reasons for greater success not resulting from, *Pande* (538).

Reserve funds, policy *re*, *Trivedi* 29,397, 29,490-5

Results, *Plymen* (34), *Trivedi* (172), *Brahma* (250); *Dwarkanath Singh* (505), 32,762-6

Sanitation not taken up by, *Trivedi* 29,616-7.

Statistics, *Trivedi* (170-1), 29,485-8.

Success of movement in Berar as compared with Central Provinces, *Trivedi* 29,404-6.

Successful society, features of, and results, *Trivedi* 29,400-3

Supervision and education

by Central Banks, and drawbacks of system, *Trivedi* (169), 29,243-61, 29,363-5, 29,425-7.

by Central Banks, not objected to at present, *Brahma* 30,003

by Government auditors desired, *Trivedi* 29,428-9

Reorganisation of system, proposals for, and measures taken, *Trivedi* (169-70), 29,270-82, 29,407, 29,489.

Taccavi advances through, *see under Taccavi under* Finance

Tendency of officials to consider profits rather than welfare of people, *Plymen* (34), *Pandeya* (127), 28,807-9

Useful and proposal for improvement, *Plymen* 27,749-50.

Working of, *Trivedi* (171); *Brahma* (247-8).

Working of, proposals *re*, *Powar* (890).

Credit system, development of, desirable for smaller cultivators, *Irwin* (343)

Co-operation—*contd.*

Debt per head, increasing, *Pande* (539), 33,348-52.
Defective organisation and defective education of members, *Trivedi* 29,579.
DEPARTMENT:
Assistance by officers of Revenue, Excise and Education Departments, suggestions for, *Deshpande* (302), 30,581.
Circles, increase to five, desirability of, *Trivedi* (168-9)
Co-operation with demonstration work, *Plymen* 27,650-1.
no Co-operation with Education Department, *Trivedi* 29,505-7.
close Co-operation with certain other departments necessary, *Deshpande* (302).
Heads, Indians as, necessary, *Deshpande* (302).
Men of Provincial Service with long and varied experience should be absorbed in, as far as possible, *Deshpande* (304).
Organisation of, *Trivedi* (168).
Staff must be drawn from Agricultural and Industrial Departments, *Deshpande* (302)
Development associations for taluks, scheme, *Brahma* (247), 30,121-7
Development must not be too quick, *Irwin* (346)
Education of members in principles of co-operation, *Brahma* 30,001-2, 30,095-7
Education and propaganda, proposed measures, *Brahma* (247).
ENCOURAGEMENT OF GROWTH OF, steps proposed for.
by Government, *Brahma* (245), *Deshpande* (302), *Dwarkanath Singh* (504), *Pande* (537)
Material advantages must be made clear to people, *Trivedi* 29,390-1.
by Non-official agencies, *Brahma* (24), 30,056-8, *Deshpande* (302), 30,582-4; *Dwarkanath Singh* (504), *Pande* 33,480-1.
Expenditure on, and need for increase, *Trivedi* 29,411-2, 29,508
Extension of movement, scope for, *Dwarkanath Singh* (503)
Federation Auditors, class of men, *Trivedi* 29,467-8
Federation of Co-operative Societies, position, *Pande* 33,393-98
Gond Societies, *Trivedi* 29,594
GOVERNMENT ASSISTANCE
in Crisis of 1920-21, *Trivedi* 29,366-8, *Brahma* 30,020-1
Extent of, etc., *Trivedi* 29,509-12, 29,537-40
larger Government expenditure desirable on, *Brahma* (245).
History of movement, *Trivedi* 29,209-13
Honorary workers and non-official agencies, value of, and scope for, work by, *Trivedi* (170).
Housing Societies, State aid advocated, *Pande* (537)
Imperial Banks should be enabled to place money at disposal of, *Brahma* (246)
IMPROVEMENTS, SOCIETIES FOR
Advance of money to, at low rates and liberal number of instalments advocated, *Pande* (537).
Need for, *Dwarkanath Singh* (504).
Scope for, and method of organisation, *Deshpande* (303).
Impulse must come from within, not from the State, *Trivedi* 29,598-9.
Insolvency Act, amendment advocated, in order to protect, *Pande* 33,339-41.
JOINT FARMING SOCIETIES
Proposals for, *Brahma* (249), *Pande* (536).
Question of, *Trivedi* (172).
Scope for, extent of, *Plymen* (34); *Deshpande* (303).
Want of mutual confidence an obstacle, *Brahma* (249).
JOINT IMPROVEMENT schemes, compulsion on minority to join
Advocated, *Plymen* (34), *Dwarkanath Singh* (505), *Pande* (538)
Objection to, *Trivedi* (172)
Lectures in normal schools by inspector of Berar Co-operative Central Institute, *Trivedi* 29,506.
Lessons on, in schools and colleges, advocated, *Brahma* (247)
Local instructors, recruitment method and salaries, *Trivedi* 29,595-7.
Non-co-operation movement, effect of, *Trivedi* 29,395-6.

Co-operation—*contd.*

Non-credit societies, loan from Central Bank to agricultural association, *Trivedi* 29,423.

NON-OFFICIAL AGENCIES:

Extent of assistance received from, and scope for, *Trivedi* 29,413-8, 29,475-84, 29,541-9, *Brahma* 30,053-8.

Grants-in-aid advocated, *Brahma* (246).

Objects attained by limited number of societies only, *Deshpande* (304), 30,514-6.

Obstacle to growth of movement, land tenure system, *Trivedi* (170), 29,470.

Organisation by Government officers, proposal, *Dwarkanath Singh* (503-4).

Pig-hunting clubs, malaria prevention clubs, village sanitation preservation societies, co-operative stores, scope for, *Deshpande* (304)

Position of Provincial and Central Banks and primary societies, *Trivedi* 29,496.

Position more satisfactory than two years ago, *Trivedi* 29,268.

Propaganda and demonstration might be more carried out through *Brahma* 29,995-6.

Primary Societies, number, *Trivedi* (168).

little Propaganda for education of public in principles of co-operation in villages, *Trivedi* 29,240-2

PROVINCIAL BANK:

Cash credit with Imperial Bank, *Trivedi* 29,369-72, 29,561-7

Deposits, *Trivedi* (172)

Dividend, *Trivedi* 29,497

Relations with Central Banks, *Trivedi* 29,359-61.

Results, *Trivedi* (172)

Working of, *Deshpande* (299-300), 30,637-51.

PURCHASE SOCIETIES:

Combination with credit and sale societies proposed, *Plymen* (34)

Establishment advocated, *Powar* (93); *Pande* (537), *Dwarkanath Singh* (504).

Importance of, and need for organisation of, *Deshpande* (303).

Object attained by many, but constant and detailed supervision necessary, *Plymen* (34)

Tendency to attach excessive importance to making of large profits, *Plymen* (34).

Purchase and supply of seed by, proposal, *Powar* (92).

REGISTRARS

Assistant Registrar in charge of Berar, proposal, *Brahma* (245).

and Assistants:

Leading of deputations of non-officials to sister provinces, proposal, *Brahma* (246).

Study leave to gain acquaintance of movement in foreign countries, proposal, *Brahma* (246).

frequent Changes, *Pande* 33,342

Indians advocated as, *Brahma* (245), 30,090

Powers recommended by Committees, objection to, *Pande* 33,366-7, 33,417-9

Sympathy and help of officers of Department of Agriculture and Department of Revenue, desirability of, *Brahma* (246)

Whole-time officer

Advocated, without frequent change, *Brahma* (245).

would be Desirable, and necessary if work of Industries Department expands, *Trivedi* 29,438-9

SALE SOCIETIES

Combination with credit and purchase societies proposed, *Plymen* (34).

Co-operation of Agricultural Department, necessity for, *Trivedi* (171).

Cotton sale societies, *Trivedi* (171), 29,289-330, 29,515-29, 29,573-4; *Brahma* (249), 29,968-84, 30,143-4.

Desirability of, *Dwarkanath Singh* (504).

Development desirable, *Plymen* (34).

Co-operation—*contd.*

SALE SOCIETIES—*contd.*

Establishment advocated, *Powar* (93); *Dwarkanath Singh* (500); *Pande* (537).

Grain, scheme, *Peterson* (445-6), 32,397-8.

Importance of, and need for organisation of, *Deshpande* (303).

Marketing societies advocated, *Dokras* (480), (484).

Rice sale societies, formation in Bilaspur district to be considered, *Trivedi* (171).

Steps necessary to meet competition of "Adtyas" or commission agents, *Brahma* (249), 29,968-84, 30,143-4.

Working of, *Brahma* (249).

Savings Banks, proposed experiment of, *Brahma* (246).

Scholarships to students to study movement abroad, proposal, *Brahma* (247).

Seed societies, *Trivedi* 29,619.

Seed unions, proposed establishment of, *Dwarkanath Singh* (501).

Societies for reducing ceremonial expenditure or abandoning expensive social customs, proposal, *Brahma* (243), (247), (249), 30,042-4, 30,114.

SOCIETIES FOR THE CO-OPERATIVE USE OF MACHINERY

Essentials of success, *Trivedi* (172), *Brahma* (249)

Scope for, *Plymen* (34), *Brahma* (249), *Deshpande* (303); *Pande* (537).

Scope for, and consideration advocated, *Trivedi* (172)

Working of, at Jalgaon, *Deshpande* (303)

Societies to decide disputes, formation suggested, *Brahma* (249), 30,089.

Societies for fighting diseases, establishment advocated, *Pande* (537).

STAFF:

Clerks and auditors, pay considered adequate to secure honesty, *Trivedi* 29,614-5.

Courses at Agricultural College under consideration, *Trivedi* 29,514

Knowledge of "Law and Principles of Co-operation," question of, *Trivedi* 29,462-6.

Recruitment from Nagpur Agricultural College graduates under consideration, *Trivedi* 29,586-7.

Subordinate officers, training of, *Brahma* 30,049-52.

Training, *Trivedi* 29,580-7.

Training and refresher courses, importance of, and proposals, *Brahma* (246).

Sweepers' societies, *Trivedi* 29,473-4

Transmission of money between central Banks and societies, refund of three-fourths of money order commission advocated, *Trivedi* (170).

Unlimited liability, sale or encumbering of land in order to pay contribution, a few cases of, *Trivedi* 29,600-13.

Urban banks, proposed formation of, *Deshpande* (303).

Value of, if properly run, *Pandeya* (127).

Village societies, annual meetings advocated, *Brahma* (247), 29,958-64.

Cotton, *see under* **Crops.**

Credit, *see under* **Agricultural Indebtedness** *and under* **Finance**

Crops and Crop Protection:

Berseem, cost of seed a deterrent on expansion, *Allan* 29,860-4

Cassava, suggestion, but no great scope for, *Allan* (205), 29,814-8

Change to more valuable crops, Eastern Circle, *Powar* 28,382-7.

CLOVER

Encouragement of cultivation by supply of seed free and then at concession rates until value realised, advocated, *Dubey* (104).

Rotation with rice, proposal, *Dubey* (105).

Suggestion re, *Amanat Ali* (387).

Combination of, in America, advantage of, *Sahasrabudhe* (462)

COTTON

Ammonium sulphate, increased use of, at Hoshangabad, *Plymen* (29).

Buri, Amanat Ali (386), 31,727-31, 31,771-2.

Capable of resisting "wilt," introduction desirable, *Amanat Ali* (386).

Crops and Crop Protection—*contd.*

COTTON—*contd.*

Cost of cultivation and income from, *Allan* (2401-2401i).
Cultivation, particulars *re* system, &c., *Allan* (2401).
increased Cultivation, *Sahasrabudhe* 32,453.
Financial results, question of, *Allan* 29,870-4.
Improvement of, by scientific sowing, *Khaparde* (403).
Increase in acreage during last few years, but tendency to decrease owing to drop in price, *Plymen* 27,629-42.
Introduction of improved varieties, particulars *re*, *Plymen* (16).
Local mixed variety: *Dokras* 32,608-9, 32,660-1.
Investigation by Agricultural Department desired, *Dokras* (481), 32,513.
Yield, *Dokras* 32,601-10.
Loss on, during present year, *Korde* 30,886-901.
Marketing, *see that title.*
Personal experience, *Amanat Ali* 31,763-9, *Pochory* 33,116-21, 33,133-5.
Increased Production per acre should be considered, *Sahasrabudhe* (462), 32,465.
Roseum
Deterioration, *Dokras* 32,513, 32,541-2, 32,544, 32,600.
Experience with, and results of, *Korde* 30,792-6, 30,902-7, *Khaparde* 31,876-8.
Results, *Plymen* (16), *Amanat Ali* (386), 31,732-4, 31,757, 31,863.
Success of, until affected by wilt owing to rainfall, *Deshpande* 30,633-6.
Seed, pure, difficulty of maintaining, *Plymen* (15).
new Seeds, proposal *re* distribution of, *Allan* (204).
Yield, *Pochory* 33,042-3.
Damage by stray cattle, *Khaparde* (403)

DAMAGE BY WILD ANIMALS *Plymen* (29), *Allan* (204-5)
Deer, *Deshpande* (301).
Jackals, *Pochory* 33,044-8.
Measures taken to prevent, *Allan* (204-5).
Pigs, *Powar* (92), *Deshpande* (301), *Khaparde* (403), *Irwin* 31,355-6; *Sahasrabudhe* (462), *Dwarkanath Singh* (501)
Prevention, proposed measures for
Clubs for killing animals, establishment in all affected areas, *Pande* (532)
Contribution from Forest Department towards fences in certain cases, *Bhargava* (428).
Extermination the only real means of prevention, *Irwin* (344).
Extermination of wild boar should be possible with proper organisation, *Irwin* (344), 31,077-81.
Fencing:
Inadequacy of, *Sahasrabudhe* (462)
Long term loans for, *Bhargava* (428).
an Uneconomic palliative only, *Urwin* (344)
Formation of parties of hunters, *Khaparde* (403).
Free-shooting permits in Government forests to *bona fide* agriculturists, *Amanat Ali* (387), 31,806-14.
Government forests should not continue as breeding farms, *Pande* (532).
Growing rows of crops disliked by wild animals along border of fields, *Amanat Ali* (387).
Growing of similar crops in fields close to each other, by arrangement between neighbouring cultivators, *Amanat Ali* (387).
Gun licences:
Issue to cultivators, *Sahasrabudhe* (462).
more Liberal grant of, *Deshpande* (301); *Amanat Ali* (387); *Khaparde* (403); *Bhargava* (428); *Dokras* (482); *Pande* (532).
Non-success, *Dwarkanath Singh* (501).

Crops and Crop Protection—*contd.*

DAMAGE BY WILD ANIMALS—*contd.*
Prevention, proposed measures for—*contd.*
Joint fencing advocated, *Dubey* (105).
Pig Hunting Clubs, formation of, *Bhargava* (428).
Pig proof wire fencing should be popularised, *Dwarkanath Singh* (501).
Pigs, killing of certain number as condition of renewal of licence, *Plymen* 31,355-6.
Removal of restrictions on cutting of trees and shrubs on banks of streams and nalas acting as breeding places, *Amanat Ali* (387), 31,773-6.
Rewards for destruction, *Pande* (532).
Shooting clubs, non success, *Dwarkanath Singh* (501).
near Reserved forests only, *Dokras* (482).
Dangerous plants, compulsory destruction of, proposal, *Plymen* (30).
Eastern Circle, nature of, *Powar* 28,351-6.
increased Fertility of the soils, need for, and methods, *Pande* (531-2).
Fodder, *see under* Animal Husbandry
Food, *Irwin* 31,161-5
Securing of better prices or increase in yield, need for, *Pande* (532).
Gardens and orchards, Berar, but reduction latterly, *Sahasrabudhe* (461)
Grain, marketing, *see that title.*
GRAM
Marketing, *see that title.*
Personal experience, *Pande* 33,214-5

GROUNDNUT
Advantages of, and encouragement by Department advocated, *Dokras* (481-2).
Area under, and prospects, *Allan* 29,725-9, 29,819-20.
Discontinued owing to trouble with jackals, *Pochory* 33,044-8
Proposal *re*, *Khaparde* (403).
Introduction of, and results, *Plymen* (16)
Use of, *Plymen* 28,040-41
Heavy yielding food crops, proposals, *Pande* (532)
Hemp, growing of, but prejudice of some cultivators against, *Plymen* 28,273-7.
High yielding varieties, continuance doubted owing to soil, *Pande* (531), 33,294

IMPROVEMENT OF EXISTING CROPS
by Agricultural Department, *Amanat Ali* (386).
Examples of, *Dubey* (105).
Methods
Irrigation facilities, widening of, *Deshpande* (301)
Rotation of groundnut crops, *Khaparde* (403)
by Selection and breeding, scope for, *Powar* (91).
by Selection and crossing on Government Farms and extension of work desirable, *Dubey* (104).
more Scientific method of sowing, *Khaparde* (403)
Seed selection, good manuring and due spacing, *Dokras* (481).
Selection and importation of better varieties, *Bhargava* (428).
Use of natural manures and proper rotation, *Deshpande* (301).
Staff, increase required, *Allan* (204).
Work on, *Allan* (204).
Consideration of problem from all aspects, *Plymen* 27,937-8.
Introduction of, by Malguzar among tenants, *Pochory* 32,913.

INTRODUCTION OF NEW CROPS AND VARIETIES :
Eastern Circle, *Powar* 28,430.
Government should advance money free of interest for three years to approved and *bona fide* cultivators, *Pande* (532).
Improvement from, but conditions required for, *Plymen* (15).

Crops and Crop Protection—*contd.*

INTRODUCTION OF NEW CROPS AND VARIETIES—*contd.*
Particulars *re*, *Plymen* (16).
Progress in, *Allan* (204).
Requirements for success, *Plymen* (29), *Powar* (91).
Suggestion, crops like Alfalfa, where irrigation possible, *Deshpande* (301).

Juar:
Diseases, *see* Pests and Diseases *below*.
Diversion to rice hoped for in time, *Pollard-Lowsley* 29,009-10.
Improvement, *Khaparde* (403).
Introduction of improved variety, *Plymen* (16).

LUCERNE:
Personal experience, *Amanat Ali* 31,704-6.
Suggestion, *Amanat Ali* (387).

MONEY CROPS, change to, from food crops:
Effects, *Trivedi* 29,559-60, 29,571-2.
but Tendency again to revert, *Plymen* 27,629-42.

OILSEEDS.
Nature of, and question of acreage under, *Plymen* 27,810-5, 28,040-4.
Research, need for, *Allan* (198).

Onions, *Plymen* 28,054-7.

PESTS AND DISEASES
Boll-rot, no protection measures, *Dokras* (482)
Cotton caterpillar, need for remedy, *Dokras* (481-2).
Juar, soaking of, with mixture of copper sulphate, *Khaparde* (404).
Juar, smut in, means of controlling, *Plymen* (14), *Dokras* (482).
Protection, *see that title below*.
Research, proposed lines of, *Khaparde* (399).
Root-rot, means of controlling, *Dokras* (482).
Taloop, no means of controlling, known, *Dokras* (482).
Water hyacinth, destruction should be made compulsory, *Plymen* (30), 27,665-8.

POTATOES, *Plymen* 28,054-5.
Seed, source of, *Dubey* 28,503-6.

PROTECTION.
from External infection, pests and diseases:
no Efficacious methods adopted, *Khaparde* (403)
Imported plants might be allowed in without investigation or fumigation on recommendation of Director of Agriculture, *Plymen* (30), 27,663-4.
Local Departments should have more power and responsibility, *Plymen* (30)
Measures not satisfactory, *Deshpande* (301).
Procedure, not always efficient and takes too long, *Plymen* (30), 27,660-2.
Internal measures against infection:
Active action desirable, *Deshpande* (301).
Cheap methods necessary, and provision to compel owners of neighbouring fields to co-operate advocated, *Pande* (533).
Desirability of, *Khaparde* (404).
Methods suggested by Department generally too expensive, *Pande* (533).

RICE:
Bone-meal satisfactory for, but caste prejudice a difficulty, *Powar* (91).
Cost of cultivation per acre, *Dubey* 28,574.
Cultivation system, *Powar* (92).
Improved varieties:
Advantages of, *Plymen* (17); *Dubey* 28,599-605.
Particulars *re*, *Plymen* (16).

Crops and Crop Protection—*contd.*

RICE—*contd.*

Introduction of improved ploughs, and means of distribution from depots, *Plymen* 27,780-8.

Irrigation: *Dubey* (103-4), 28,557-9, 28,610-11.

Agreement system, *Pollard-Lowsley* 28,891-5, 28,959-61.

Relaxation of rules advocated in certain cases, *Dubey* (104).

Delta required, *Pollard-Lowsley* 29,011-3.

Statement of extent to which rice grown and irrigated in more important rice-growing districts, *Pollard-Lowsley* (131-2).

little Manuring of, *Plymen* 27,763-4.

Marketing, *see that title.*

Personal experience, *Dubey* 28,499, 28,507-32, 28,574, 28,577-85, *Bhargava* 32,168-72, 32,352, *Pande* 33,208-9, 33,228-31.

Profit per acre, *Dubey* 28,577.

Subdivision of holding beyond limit of four acres should be prohibited, *Dubey* (103), 28,615.

Transplantation, *Plymen* (14), 27,906; *Dubey* 28,527-30, 28,606-8.

Known about before propagated by department, *Pande* 33,371.

Prevention by fragmentation of holdings, *Dyer* (152).

in Waingunga Canal areas, proposals, *Dubey* (105).

Yield from Department seed and ordinary seed, comparison, *Plymen* 27,882-8

SANN HEMP

for Fodder and manure, special concessions for growing of, under irrigation, proposal, *Pande* (535), 33,317-8

Religious prejudice against, disappearing, *Dwarkanath Singh* 32,767-9.

SEEDS

Cost of, a deterrent to expansion of certain crops *Allan* 29,860-1.

Distribution. *Plymen* (10-11), (15), 27,871-81, 28,034-9, *Irwin* 31,267-8.

through Agricultural Association, *Pande* (532).

through Agricultural Associations advocated, *Dokras* (482).

Central seed farms belonging to each circle agricultural association, scheme, *Allan* (204).

Certified seed farmers, suggestion *re* supply of seed to, by Government, *Pande* (531).

through Co-operative credit societies, proposal, *Brahma* (244).

combined Co-operative and seed producing agencies, *Plymen* 27,649

Co-operative seed unions, proposed establishment of, *Dwarkanath Singh* (501).

by Co-operative Societies, suggestion, *Powar* (92).

Department should establish licensed sellers for sale of good seed at fixed rates, *Brahma* (244)

through Government, Court of Wards and certified farms advocated, *Pande* (532).

supply from Government farms and seed farms advocated, *Dubey* (102).

Importance of work, *Bhargava* (428).

Local Boards should be encouraged to maintain stores, *Deshpande* (301), 30,579-80.

to Local growers personally, *Amanat Ali* 31,696-8, 31,789-91, 31,825.

Maintenance of stores at Tahsil headquarters, proposal, *Deshpande* (301).

Measures for, *Powar* (91-2).

Roseum seed unions, *Allan* (204).

Seed depots, suggestion *re* establishment of, *Amanat Ali* (387)

through Seed farms or arrangements with large cultivators to grow pure seed in Jubbulpore Division, and extension of methods desirable, *Irwin* (344).

Cultivation—*contd.*

TILLAGE SYSTEMS, IMPROVEMENTS—*contd.*

proposed Methods:

greater Depth of primary cultivation in certain crops, *Allan* (205).

Better implements for hot weather tillage and light harrowing, *Bhargava* (428).

Improvement of existing implements preferable to introduction of new types, *Deshpande* (301).

Plough, judicious use of, *Khaparde* (403).

Ploughs and *Bakhars* worked by power, supply by Government on contract system, *Pande* (532), 33,300-3.

Small iron ploughs, reintroduction, *Bhargava* (428).

Need for, *Bhargava* (428).

little Progress made, *Sahasrabudhe* (457)

as Result of extended use of inversion plough, *Plymen* (Mem. 14).

Traditional methods, gradual transformation into modern methods needed, *Khaparde* (399).

Dairying Industry, *see under* **Animal Husbandry.**

Demonstration and Propaganda:

Adoption of expert advice, means of inducing, *Powar* (90), *Allan* (201); *Brahma* (242), 30,110-13, *Deshpande* (298), *Irwin* (343), *Khaparde* (400), *Bhargava* (427).

AGRICULTURAL ASSOCIATIONS *Plymen* (11), 27,705-13; *Allan* 29,810-3.

Nagpur, exist only in name, *Deshpande* 30,579-80.

Proposals re, value of, and payment of travelling, etc., allowances to members, *Dubey* (101), (104), (105), 28,594-8, 28,665-8.

Value of, *Powar* (89).

Agricultural Conferences, resolutions passed by, but not translated into vernacular and no action taken on, *Sahasrabudhe* (456), 32,439.

Agricultural shows on farms and in fairs, value of, *Dubey* (101).

Agricultural shows, suggestion for, *Khaparde* (400)

American methods, and tribute to, *Sahasrabudhe* (456, 457)

Assistance from District Associations, etc., *Plymen* 27,911-4, 27,904.

Attention paid to, equally with research, *Plymen* 27,526-7.

through Big landowners desirable, *Plymen* 28,082-7

BY CINEMA FILMS. *Plymen* (27), 27,651-7

Value of, *Powar* (90), *Deshpande* (298).

small Circle associations, scheme for formation of, *Allan* (201).

Class towards which work directed, *Allan* 29,865-9.

Conservatism of Berar peasants and slowness to take in new ideas, *Khaparde* (400).

Co-operation with Co-operative Department, *Plymen* 27,650-1.

Co-operation between farmers and staff of Agricultural Department necessary, *Deshpande* (298).

through leading Cultivators advocated, *Dubey* 28,477-8, 26,637-49 28,637-49

Cultivators must be persuaded that improvement will be advantageous, *Dubey* 28,479-82

growing Demand for advice and help on part of cultivators, *Amanat Ali* 31,710.

DEMONSTRATION FARMS:

Carrying on of, on commercial basis, desirability and possibility of, *Sahasrabudhe* (455), 32,426-7.

Effectiveness of, question of, *Sahasrabudhe* (455).

satisfactory Financial results desirable, *Plymen* 28,077-81.

Increase in number advocated, *Dubey* (101).

System, success of, *Powar* (89); *Plymen* 27,892-6.

in each Tahsil advocated, *Dubey* (101).

Value of, *Dubey* (101).

at Yeotmal and Basim, *Sahasrabudhe* (455).

Demonstration lorries, proposal, *Deshpande* (297).

DEMONSTRATION PLOTS:

Importance of, *Plymen* (27).

Inadequacy of number, *Dwarkanath Singh* (496).

Demonstration and Propaganda—*contd.*

DEMONSTRATION PLOTS—*contd.*
Increase in number desirable, *Powar* 28,436.
One for group of 50 villages advocated, *Pande* (529).
Organisation of, proposals, *Plymen* (27), 28,289-91.
System and success, *Powar* (89), 28,434-5.
Two or three in each Revenue Inspector's Circle advocated, *Dubey* (101).
Value of, *Dubey* (101); *Allan* (201).
Work carried on and satisfactory results, *Plymen* (14-5), 27,892, 27,896, 27,899, 28,080-1, 28,144-8.

DEMONSTRATORS:
Class of, training, etc., *Plymen* 27,531-6, 27,889, 28,093.
Inadequate number, *Amanat Ali* 31,701-3.
Payment of allowances to leading cultivators to attend meetings, etc., of, suggestion, *Dubey* (102), 28,594-8.

Departmental resolutions, etc., increased translation of, into vernacular and free distribution necessary, *Sahasrabudhe* (456), 32,439.
increased Expenditure on, needed, *Deshpande* (298)
increased Expenditure on, needed, but not at expense of research, *Powar* 28,322-5.
Expenditure on propaganda and research, comparison, *Plymen* 28,298-300.

EXPERIMENTAL FARMS
Akola, *Sahasrabudhe* (455)
in each District, advocated, *Dubey* (101)
Profitable carrying on of, not possible, *Sahasrabudhe* (455)

Experiments by cultivators not encouraged, *Powar* 28,327.
Factors influencing cultivators to improve practice, *Dwarkanath Singh* (496).

FAILURE OF
Chhattisgarh, transplantation of paddy, *Allan* (201).
in Most cases, and reasons, *Deshpande* (298).

FIELD DEMONSTRATIONS
Co-operation between officials of Agriculture and Revenue Departments, importance of, *Irwin* (342-3), 31,066, 31,292-5
Department should undertake work with motor tractors at cheaper rates than with old methods to demonstrate advantage of, *Brahma* (242).
Effectiveness, proposals for increasing, *Plymen* (27), *Irwin* (342-3), *Khaparde* (400), *Bhargava* (427).
must be Free of cost to cultivator, *Bhargava* (427), 32,268
Method of carrying out, proposal, *Dubey* (101).
Staff, number, etc, and need for increase, *Allan* 29,746-9.
Value of, *Dubey* (101).

Government subsidy to men desirous of farming on improved lines, proposal, *Dubey* (101).
to Groups of small cultivators the best method, *Amanat Ali* 31,849.
Lantern slides and cinema films useful, *Deshpande* (298).
Measures adopted and results of, Eastern Circle, Raipur, *Powar* (89-90).
proposed Measures for influencing and improving agricultural practice, *Deshpande* (297)
Measures for influencing and improving the practice of cultivators, *Khaparde* (400); *Bhargava* (427).
Methods adopted, and need for improvement, *Plymen* 27,525, 27,768, 27,890-6, 27,899-903, 28,094-8.
Policy advocated and American and English ideals should be followed, *Sahasrabudhe* (456).
Poona Agricultural Show, steps should be taken to bring results before people, *Sahasrabudhe* (461), 32,439.
Popularisation of use of machinery through demonstrations and shows, etc., *Brahma* (242).
Propaganda work, importance of, *Sahasrabudhe* (456).
Proposal *re*, *Korde* (317).
Public attitude *re*, *Allan* 29,761-5.
Records of experiences, extent to which kept, and importance of, *Plymen* 27,537-45.

Demonstration and Propaganda—*contd.*

Results of propaganda, *Plymen* 28,092.
Results, suggestions *re* publication of, *Pande* (529), 33,374.
Single purpose demonstration, effective in certain cases, *Powar* 28,328-9.
Staff, qualities required, *Deshpande* 30,510-3.
Success, examples of, *Powar* (90), *Dubey* (102), *Allan* (201), 29,756-8
Success of, in influencing and improving agriculture, *Pande* (529).
Success as result of propaganda for selected seed in Sihora tahsil, *Pande* (529).
Touring lecturers, value of, *Khaparde* (400).
Well organised intensive propaganda, necessary, *Powar* (90).
Well-to-do men should be encouraged to adopt new methods and might be rewarded by prizes, *Brahma* (242)
Work, *Plymen* (10, 11).
Work easier in cotton tracts and opening of demonstration plots there unnecessary, *Plymen* 27,907.
Work not satisfactory as staff and funds inadequate, *Deshpande* 20,451-2, 30,509, 30,549-50

DESHPANDE, Rao Bahadur M. G., Nagpur. (296-304), 30,430-30,678.

Agricultural operations, 30,431-42, 30,493-7, 30,530-7, 30,604-8, 30,612-22.
Distribution of seed to tenants, 30,495-7, 30,572-5, 30,617-22, 30,660-9.
Moneylending by, to cultivators, 30,488-92, 30,653-71
Position as landowner, system of letting out land, etc., 30,478-87.

ADMINISTRATION
close Co-operation between Agricultural Co-operative, Veterinary and Industrial Departments necessary, (302)
Co-ordination of activities of Governments, fuller exchange of experience and opinions between officers of Provincial Agricultural Departments advocated, (298).
Meteorological Department, good work done by, (298)
Post and telegraph offices, increase in rural areas advocated, (298)
Railways:
Concession rates to farmers advocated, (298), (301).
Pilfering and damage during transit, (298).
Waggons, inadequate supply in harvest season, (298).
Transport, improved facilities needed, (298), 30,459-63.

AGRICULTURAL INDEBTEDNESS
Development of land mortgage credit on co-operative lines, proposal (298-9).
Moneylenders, necessary until co-operative societies able to meet whole demand, 30,654-7
Nazarana not considered to be a cause of, 30,677-8

AGRICULTURAL SERVICE, attitude of subordinates of, (298).

ANIMAL HUSBANDRY, silage making not believed in, 30,502-4.

CO-OPERATION:
Cattle breeding societies, failure of, (303).
Central Provinces and Berar Provincial Bank, working of, (299-300), 30,637-51.
Credit Societies:
Applications for, and issues of loans, procedure, 39,476-7
Defects of present system, (302-3)
Department:
Assistance by officers of Revenue, Excise and Education Departments, suggestions for, (302), 30,581.
Heads, Indians as, necessary, (302).
Men of Provincial experience with long and varied Service should be absorbed in, as far as possible, (304).
Staff must be drawn from Agricultural and Industrial Departments, (302)
Encouragement of growth of, proposals for, (302), 30,582-4.
Improvement societies, scope for, and method of organisation, (303).
Joint farming societies, scope for, only where waste land available or forest land needing to be reclaimed, (303).

DESHPANDE, Rao Bahadur M. G.—*contd.*

Co-operation—*contd.*
Objects attained by limited number of societies only, (304), 30,514-6.
Pig-hunting clubs, malaria prevention clubs, village sanitation, preservation societies, co-operative stores, scope for, (304)
Purchase societies, importance of, and need for organisation, (303).
Sale societies, importance of, and need for organisation of, (303)
Societies for use of agricultural machinery, scope for, and working of, at Jalgaon, (303).
Urban banks, proposed formation of, (303).

Crops.
Cotton, *Roseum*, success of, until affected by wilt owing to rainfall, 30,633-6.
Damage by wild animals and prevention methods, (301)
Improvement of existing crops, methods:
Irrigation facilities, widening of, (301)
Use of natural manures and proper rotation, (301)
Internal measures against infection, active action desirable, (301).
Introduction of Crops like Alfalfa suggested where irrigation possible, (301).
Protection from external infection, measures not satisfactory, (301).
Seeds, distribution of
Local Boards should be encouraged to maintain stores, (301), 30,579-80
Maintenance of stores at Tahsil headquarters, proposal, (301)
by Malguzar, 30,495-7, 30,572-5, 30,617-22, 30,660-71.
through Selling agencies in every Tahsil under supervision of Department of Agriculture, proposal (301)

Cultivation, poor quality of bullocks, 30,498-501.

Demonstration and Propaganda
Adoption of expert advice, means of inducing, (298).
Agricultural Associations, Nagpur, exist only in name, 30,579-80
Co-operation between farmers and staff of Agricultural Department necessary, (298).
Demonstration lorries, proposal, (297).
Increased Expenditure on, needed, (298).
Failure of, in most cases, and reasons, (298)
Lantern slides and cinema films useful, (298)
proposed Measures for influencing and improving agricultural practice, (297)
Staff, qualities required, 30,510-3
Work not satisfactory as staff and funds inadequate, 20,451-2, 30,509, 30,549-50.

District Boards, demand for better education and for better communications, 30,461-6.

Education
Adult, deficiency of facilities, and suggestions, (297), 30,568, 30,455-8.
Agricultural.
Attendance, (296).
Clubs, scheme for establishment in Vernacular and Anglo-Vernacular schools, (297), 30,453-4, 30,560-3.
College, opportunities for practical work, needed, (297).
Facilities, need for extension, (296).
in High Schools, as optional subject, proposal, (297), 30,454
Institutions and teachers, inadequate supply, (296).
in Normal schools, proposal, (297), 30,564-6
Objects to be aimed at, (296).
Students:
After-careers, (297), 30,609-11
Source of, (297), 30,505-8.
Technical knowledge, improvement of, no movement for, (297), 30,538-41.
Teachers in rural areas, advantage of drawing from agricultural classes, (296).

DESHPANDE, Rao Bahadur M. G.—*contd.*

EDUCATION—*contd.*
Demand for, 30,464-6, 30,569-71.
Nature study, approved, (297).
School farms, approved, (297).
School plots, approved, (297).

FERTILISERS
Adulteration, sale through licensed sellers under control of Department of Agriculture, proposed, (301).
Artificial, drawback of, as compared with natural manures in India, (300-1).
Cowdung, methods of discouraging use of as fuel, (301).
Effect of manuring with phosphates, nitrates, sulphate of ammonia and potash manures not properly investigated, (301).
Natural manures
Advantages of, over artificial, (300-1)
Improvement of cattle industry desirable, (300-1), 30,576-7.
Popularisation of new and improved fertilisers, methods, (301).

FINANCE:
Land Mortgage Banks
Development of, on large scale necessary, and suggestion for, (298-9), 30,467-74, 30,624-30.
Essentials for success, (299).
State assistance advocated, and proposals, (299).
Money must be provided at cheaper rate in order to make farming pay, 30,536-7.

HOLDINGS, importance of aggregation, (303).

IMPLEMENTS
Improved, measures for hastening adoption of, easy terms for payment in instalments, (301)
Improvement of existing implements preferable to introduction of new types, (301).
Manufacture of, measures for encouragement of, (301-2).
Railway rates, concessions advocated, (301)

LAND TENURE SYSTEM, need for change, (303), 30,551-6

LOCAL BOARDS:
Cess on malguzars, 30,586-92.
Nagpur
special Educational cess authorised, but not levied, 30,593-6.
Market and other dues, levy authorised, but not carried out, 30,596-603.

MIDDLE-CLASS YOUTHS, selection of students for scientific training abroad, proposal, (297).

RESEARCH:
on Cotton breeding, physiology, technology, entomology and mycology, suggested, (296).
District research, increased facilities and funds needed, (296).
Financing of.
Contributions from landholders, might be received if research profitable to their cultivation, 30,447.
Government should provide funds, 30,445.
Taxation would not be favoured, 20,675-6.
by Non-official gentlemen, suggestion for encouragement, (296), 30,529.
Organisation of, criticism, (296), 30,509, 30,520-6.
Provincial Research Committee, scheme for formation of, at Nagpur under chairmanship of Director of Agriculture, (296), 30,443-7.
Results must be brought to notice of cultivators, (296).
Scientific staff of Government of India, increase, increased propaganda work advocated in preference, (298).
Workers, Indians should be trained as, (296), (297), 30,527-8.

VETERINARY SERVICE, attitude of subordinates of, (298).

District or Local Boards or Councils:

AKOLA:

Cess levied for educational purposes and increase in, *Korde* 30,737-30,746, 30,785-9.
Expenditure on wells, *Korde* 30,851-3.
Improvement of fair weather roads, work *re*, but need for funds, *Korde* 30,747-50.
Insufficient funds, *Korde* 30,725, 30,736.
Public demand for better educational facilities and better roads, *Korde* 30,726-9.
Apathy of, *re* veterinary matters, *Irwin* 31,310-9.
Assistance of co-operative movement by, extent to which possible, *Brahma* 30,008-9.
Attitude *re* rural sanitation, *Stiles Webb* 32,079-82.

CESSES.

Amalgamation of, in Central Provinces, *Irwin* 31,121-2, 31,175-7.
Extra levied in some districts, *Irwin* 31,123-9.
on Malguzars, *Deshpande* 30,586-92.
Demand for better education and for better communications, *Deshpande* 30,461-6.
Dispensaries under, *see under* Veterinary.
Expenditure on schools greater than on roads, and roads considered of first importance, *Irwin* 31,091-5, 31,120.
Interest in rural matters, extent of, *Irwin* 31,329.
Interests mainly schools, *Pande* 33,404-7.
Jubbulpore, revenue, and expenditure mainly on education, *Bhargava* 32,288-90.
Maintenance of seed stores by, should be encouraged, *Deshpande* (301), 30,579-80.

NAGPUR:

special Educational cess authorised, but not levied, *Despande* 30,593-6.
Market and other dues, levy authorised, but not carried out, *Deshpande* 30,596-603.
Revenue, proportion given to, *Irwin* 31,174.
Roads under, *see that title.*

DOKRAS, M. R., Pleader, Chandur, Amroati district: (478-485), 32,491-32,673
Agricultural operations, 32,493-502, 32,586-99, 32,646.
Bullocks bred by, and sale for racing, 32,528-30.
Poultry keeping, 32,531-4, 32,629-39.
Seed, source of, 32,543-5.

ADMINISTRATION:

Agriculture and education should be under same Minister, 32,492.
Meteorological Department, of no service to general body of agriculturalists and proposal *re*, (480).
Post Office Savings Banks, available, but not used by agriculturists, money hoarded as silver ornaments, 32,663-5.
Postal facilities, fairly satisfactory, 32,662.
Railways:

better Facilities for transport of cattle advocated, (480).
Freight rates for agricultural produce should be lower than common rates, (480), 32,514-6.

Roads, metalled, increased number advocated, (480).

AGRICULTURAL DEPARTMENT.

increased Expenditure on, advocated by decreasing number of excise officers, 32,606-9, 32,575-80, 32,619-21.
Staff:

Increase advocated, (479).
Junior officers, transfer between wheat and cotton tracts un desirable, (479), 32,647-8.

DOKRAS, M. R.—*contd.*

AGRICULTURAL INDEBTEDNESS.
Causes, (480).
Credit, sources of, (480).
Damdopat, 32,562.
Gambling, connection with indebtedness and evil of, and need for remedy, (480), 32,551-9, 32,564, 32,611-4.
Legislation on lines of Punjab Alienation of Land Act, not advocated, 32,552.
Measures for lightening burden of debt, spread of education, (480), 32,649
Moneylenders, passing of land into hands of, (480), 32,550-1.
Moneylending by Brahmins, 32,560-2.
Repayment, causes preventing, (480), 32,546
Restriction of credit and prohibition of non-terminable mortgages not advocated, (480).
Usurious Loans Act, not applicable to Berar, 32,563, 32,565

AGRICULTURE LABOUR, wages, 32,549.

ANIMAL HUSBANDRY.
Fodder
Analysis of, and determination of nutritive constituents, proposal, (483), 32,652-9.
Combination of feeds, proposal, (483-4), 32,652-9.
Dry, storage of, 32,523-5.
Silage
Compulsory use of, at Government farms advocated to demonstrate advantages of, (484), 32,526
Engine needed for making, 32,527

CO-OPERATION
Association of growers of each crop, proposal, (480), (484)
Credit societies
Criticism of, and degeneration into moneylending businesses, 32,517, 32,566.
no Supervision over purpose of loans, 32,517.

CROPS
Cotton
Local mixed variety, (481), 32,513, 32,601-10, 32,608-9, 32,660-1.
Roseum, deterioration, 32,513, 32,541-2, 32,544, 32,600.
Damage by wild animals
Generous grant of licenses for firearms, proposed, (482)
near Reserved forests only, (482).
Groundnut, advantages of, and encouragement by Department advocated, (481-2).
Improvement by seed selection, good manuring and due spacing advocated, (481)
Pests and diseases
Boll-rot, no protective measures, (482).
Cotton caterpillar, need for remedy, (481-2).
Juar, smut in, means of controlling, (482).
Root-rot, means of controlling, (482).
Taloop, no means of controlling, known, (482).
Seeds, distribution through Agricultural Associations advocated, (482).

CULTIVATION
Harrowing, proposal *re*, (482).
Mixture of *juar* and *urid*, and *juar-mung*, proposal, (482), 32,518-9.

DOKRAS, M. R.—*contd.*

CULTIVATION—*contd.*

Ploughing.

by Brahmins, no caste difficulty but not usually done, 32,668.

Consolidation of land after, need for, and suggestion *re* use of cultipacker, (483), 32,521, 32,625.

Mechanical, experience with, 32,520-1.

Popularisation, proposal for, (483).

Rotation proposed, (482).

EDUCATION.

Adult, means of popularising in rural tracts, (479).

Agricultural:

Attendances not satisfactory and reasons, (478).

College graduates as managers of estates would be welcomed and question of pay, 32,536-40, 32,594-9.

Facilities, inadequacy and urgent need for extension, (478).

Incentive, (479).

in Middle schools, proposal, (484-5).

in Primary schools, proposal, (478), (479), (485), 32,510-2.

Proposals, (478-9), (484-5).

Schools in every big town advocated, (478).

Students

After careers, (479)

Source of, (479).

Technical knowledge, no movement for improvement known of, (479).

Teachers should be drawn from agricultural classes, (478)

Defects of system in that indifference and sometimes aversion to agriculture created, (484).

one Minister for agriculture and, advocated, 32,492.

Nature study, advocated and proposal *re*, (479).

Primary

Compulsory, not satisfactory as agriculture not included, (485).

Depressed classes, question of sitting in same school as others, 32,530-2.

Small proportion of boys in fourth class, reason, (485).

School farms, advocated, (479).

School plots, advocated, (479).

EXCISE, total prohibition of alcohol advocated, 32,570-80, 32,615-7.

FERTILISERS.

Adulteration, guarantee of proportion of plant foods in, proposal, (481)

free or cheap Analysis of soil for cultivators, proposal, (481).

Dry earth system of urine conservation, use of, even in rainy season should be induced, (481).

Effect of phosphates, etc., not sufficiently investigated, (481).

Natural, increased use of, (481).

Popularisation of new and improved proposed measures for, (481).

Soil surveys, proposal, (481).

Trials of, on Government farms and Association demonstration plots, proposal, (481)

HOLDINGS.

Consolidation, attempt not advocated, (481), 32,567-9.

Fragmentation below 5 acres should be prohibited (481), 32,569.

Legislation *re* minors, etc, not advocated, (481).

IMPLEMENTS.

Distribution, high railway freight a difficulty and reduction advocated, (483).

Improved, means for hastening adoption of, (483).

Repair, mechanical schools, training of mechanics, proposal, (483).

DOKRAS, M. R.—*contd.*

MARKETING:
Co-operative associations, proposal, (480), (484).
Cotton·
Berar system and defects, (484).
Distance of cultivators from markets, 32,626-8.
Exhibition of Bombay rates, opposition by merchants, 32,505.
Facilities not satisfactory, (484)
Information to cultivators, etc., of market conditions, etc., necessary, (484).
Market Committee, representation of cultivators advocated, but if impossible, representative of Agricultural Department would be improvement, (484), 32,503-5.

MIDDLE-CLASS YOUTHS, means of making agriculture attractive to, Demonstration farms at every big town, (479)

POULTRY BREEDING
Encouragement as subsidiary industry advocated and proposed measures for, (484), 32,531
Keeping of poultry to avoid tick trouble in cattle, 32,531-4, 32,629.

RATE OF EXCHANGE, opinion *re*, 32,666.

SOILS·
Erosion, means of preventing, (481), 32,650-1
Improvement by levelling and bunding, example, (481).
Improvement, means of, (481).

VETERINARY.
Contagious Diseases, legislation not advocated, (483)
Department, control by Director of Agriculture approved, (483).
Dispensaries.
under Control of District Boards and working well, (483)
Expansion will become necessary, (483)
Full use not made of, owing to ignorance, (483).
One Surgeon should be attached to each, separate from touring assistant surgeons, (479-80), (483).
no Touring, (483).
Transfer to control of provincial authorities not advocated, (483).
Inspectors, posts should be abolished and the men appointed to take charge of dispensaries at big towns, (480)
Preventive inoculation.
no Fee charged, (483).
no Obstruction, (483).
Serum, no difficulty in obtaining, (483).
Staff, increase advocated, (479)

WELFARE OF RURAL POPULATION
Economic surveys in typical villages desirable, and proposals *re*, (485)
Social Service League, establishment of institutions on lines of, proposal, (485), 32,670-3.

D'SILVA, Mr., Officiating Inspector of Schools, suggestions for introducing agriculture in vernacular middle schools (370-2).

DUBEY, RAMCHARAN LAL: (100-8), 28,445-28,776

Agricultural operations, 28,448-72, 28,499, 28,570-85, 28,695-706, 28,713, 28,727-30, 28,734.
Service experience, 28,474-6, 28,702-3, 28,726.

AGRICULTURAL DEPARTMENT:
Expansion necessary, (102).
Men desirous of carrying on private farming should be allowed to retire on proportionate pension and assisted by subsidy or loan, (101), 28,486, 28,660-4, 28,731-3.
Services fairly satisfactory considering small staff available, (102).

DUBEY, RAMCHARAN LAL—*contd.*
AGRICULTURAL DEPARTMENT—*contd.*
Staff:
Inadequacy of, (102).
Interchange with officers of Revenue Department would be advantageous, 28,772-4.
Suitable men should be sent for training to more advanced countries, (102).
Subordinate, increased travelling allowances advocated, (102).
AGRICULTURAL INDEBTEDNESS:
Bank for advancing money to cultivators advocated, (103), 28,650.
Causes, (103).
Credit, sources of, (103).
Moneylenders
Dealings with, should be stopped, (103).
Passing of land into hands of, (103), 28,624.
Mortgages
Non-terminable, should be prohibited, (103).
Right of mortgage and sale, limitation advocated, (103).
Repayment, reasons preventing, (103).
AGRICULTURAL INDUSTRIES
Basket making, (106).
Bee keeping, no future for, (106)
Bidi making, diversion of labour from agriculture, (106)
Factories for oil pressing, sugar making, cotton ginning and rice hulling, establishment by Government not advocated, (107).
Fruit and vegetable growing, desirable, (106)
Intensive study of, desirable, (107)
Lac culture, (106)
Poultry rearing, prospects, (106)
Subsidiary industry, agriculture as, (107)
Subsidiary industries other than Agricultural, objections to establishment, owing to risk of diversion of interest from agriculture, (106).
Time spent by cultivators on holdings, (106)
AGRICULTURAL LABOUR
Extension of cultivation in ryotwari lands in Baihar Tahsil, suggestion for, (107).
Seasonal migration, (107).
Shortage, (107).
ANIMAL HUSBANDRY
Bulls, castration of
Legislation, proposal, (106), 28,680.
People should be trained to carry out, 28,681-2.
Condition of cattle, 28,495, 28,741-3
Feeding, conditions, 28,491-4.
Fodder
Dry, straw supply would increase with increase in out-turns of crops, (106).
Green, absence of, in dry seasons, difficulty of remedying, (106).
Improvement of supply, means of, (106)
Shortage, periods of, (106).
Grazing
Grass borders, care of, should be left to cultivator, (106)
Overstocking of common pastures, suggestions for prevention, (106).
Improvement of breeds.
by Selective breeding, (106).
Stud bulls reared at Government cattle-breeding farms, increase in number needed, (102), (106), 28,487-90.
Suggestions, (106).
Limitation as to number of extra cattle kept by cultivator, proposal, (106), 28,651-9.
Meetings of cultivators, proposal, (106).
Professional cattle breeders, 28,745-8.

DUBEY, RAMCHARAN LAL—*contd.*

CROPS :

Clover, encouragement of cultivation by supply of seed free and then at concession rates until value realised, advocated, (104).
Damage by wild pigs, joint fencing advocated, (105).
Fodder, trials of, on Government experimental and demonstration farms advocated, (104).
Improvement by selection and crossing on Government Farms and extension of work desirable, (104).
Potatoes, source of seed, 28,503-6
Replacement of present, by late and heavy yielding varieties of rice in areas commanded by Waingunga Canal, suggestion, (105).

Rice.
Cost of cultivation per acre, 28,574.
Improved varieties, advantages of, 28,599-605.
Personal experience, 28,499, 28,507-32, 28,574, 28,577-85.
Profit per acre, 28,577.
Transplanting, 28,527-30, 28,606-8.

Seeds, supply from Government farms and seed farms advocated, (102)

Sugarcane
Condition of cultivation in Balaghat District, 28,539-44
Coimbatore, hardness of canes and need for suitable crushing mill, (105), 28,454-7.
Personal experience, 28,450-9, 28,507, 28,544-51, 28,736-40
Manuring, personal practice, 28,470-2
Profit per acre, 28,544-5

Wheat, Pusa, advantage over local wheat, 28,560-3.

CULTIVATION

with Buffaloes, difficulty in connection with, 28,549-51
Improvements, (105), 28,586-91.
Rotation, introduction of clover as second crop after rice in irrigated areas under Waingunga Canal suggested, (105).
in Ryotwari villages, conferring of proprietary rights suggested in order to encourage, (107).
Tillage systems
Jat plough, use of, for sugarcane and garden cultivation, demonstration on larger scale advocated, (105).
M.S.N. plough, introduction of, (105).

DEMONSTRATION AND PROPAGANDA.

Agricultural shows on farms and in fairs, value of, (101).
Cultivators must be persuaded that improvement will be advantageous, 28,479-82.
Demonstration farm in each Tahsil advocated, (101).
Demonstration plots:
Two or three in each Revenue Inspector's Circle advocated. (101).
Value of, (101).
Experimental Farm in each District, advocated, (101).
Field demonstration:
Method of carrying out, proposal, (101)
Value of, (101)

Government farms:
Increase in number advocated, (101).
Value of, (101).
Government subsidy to men desirous of farming on improved lines, proposal, (101).
Staff, payment of allowances to leading cultivators to attend meetings, etc., of, suggestion, (102), 28,594-8.
Successes, examples of, (102).
Working through leading cultivators advocated, 28,477-8, 28,637-49.

DUBEY, RAMCHARAN LAL—*contd.*

EDUCATION:
Adult, in rural tracts, proposed measures for popularising, (101).
Agricultural:
College.
Curriculum not suitable for small farmers, 28,631.
Practical work on Government Farm after leaving, advocated, (100).
Students.
After careers, (100)
Source of, (100).
in English middle or high schools, not desirable, (107).
Institutions, increased number needed, (100).
in Normal schools, suggestion, (101).
Teachers:
Source of, unimportant, so long as practical training given by, (100)
Supply sufficient, (100).
Demand for, for sons, but difficulties, 28,484-5, 28,628-30, 28,685-8.
Primary
Compulsory, in rural areas, not desirable, (107-8).
Danger of lapse into illiteracy after leaving, and need for village libraries and suitable literature, (107).
Small proportion of boys in, reasons, *Dubey* (108)
no Radical change necessary, (107).
School farms.
in Middle and High Schools, of little value, (100-1).
in Primary schools, valueless, (100)
School Plots at Primary schools in rural areas
Advantageous, (100)
Flowers and vegetables should be grown, (100), 28,635-6.

FERTILISERS
Adulteration, prevention by supply from depots on Government Farms after analysis advocated, (104), 28,750.
Bones should be crushed and used as manure instead of being exported, (104)
Cowdung use as fuel and measures for discouragement of, (104). 28,671-7.
Increased use of, would result from low price, (104).
Karanja leaves, suggestion re use, (104), 28,522
Manuring of sugarcane, (104), 28,749-62.
Sann hemp, difficulty of growing, 28,515-6

FINANCE
Loans to cultivators·
Extension, suggestions, (102)
under Government control, suggestion, (102).
Seed, manure and implements should be supplied through Agricultural Department on greater scale, (102), 28,767
Taccavi advances
Criticism of procedure and proposed modifications, (102-3).
Expansion of system, suggestion, (103).

FRUIT, watermelons, personal experience, 28,499-502.

HOLDINGS.
Consolidation.
by Arbitration might be possible in some cases, legislation may be necessary, (103), 28,616-9
Desirable, (103).
Rice, subdivision beyond limit of four acres should be prohibited, (103), 28,615.

IMPLEMENTS.
Improved, adoption proposed means, (105).
Sugarcane mills, suitable for small cultivators, need for, and suggestions, (105), 28,454-7

DUBEY, RAMCHARAN LAL—*contd.*

IRRIGATION
Department, unpopularity of, (103).
Improvement of wells and lifts needed, (107).
Introduction of new crops under, lack of defined stable policy, (104).
Openings in irrigation channel, improvement needed, (104).
Rice, (103-4), 28,557-9, 28,610-11.
Sugarcane, (104).
by Wells.
Improvements proposed, (103).
Persian wheel, personal experience, 28,462-9, 28,612-5, 28,679, 28,724-5
Sinking of, not understood by people and work should be undertaken by Agricultural Department, 28,678, 28,717-23.

LAND TENURE, market value of tenancy land, 28,689-93.

LEGISLATIVE COUNCIL, little sympathy with agriculture, 28,565-9.

MARKETING, overflooding of markets and low prices at harvest times, change of dates of payment of land revenue and water rate suggested to avoid, (107), 28,496-8, 28,763-71.

MIDDLE-CLASS EDUCATED MEN, means of attracting, to take up agriculture, (101).

SUGAR
Gur
improved Boiling furnace, (102).
Shortage of, and importation, (105), 28,704, 28,708-12.
White, shortage of, 28,709.

SUGARCANE.
Crushing mill, introduction of improved, (102).
Fertilisers, introduction of, efforts, (102).
Improved varieties, introduction of, (102).

TAHSIL AGRICULTURAL ASSOCIATIONS, proposal *re* payment of travelling allowance and daily allowance to members, and small cess might be levied on land revenue for, (101), (104), (105), 28,594-8, 28,665-8

VETERINARY
Contagious Diseases.
Delay in treatment and need for increased staff, 28,554-6.
Isolation and disinfection necessary at present until accommodation available for segregation, (105).
Department, control by Director of Agriculture not desirable, (105).
Dispensaries·
Control by District Boards, (105).
no Expansion noticeable, (105)
Placed too far from cultivators, (105).
Touring, not fully used except during outbreaks, (105).
Disposal of diseased carcases, legislation advocated, (106)
Medicines
Malguzars should have stock of, and be trained to use, (105), 28,669-70.
Patwaris should hold stock of, and be instructed in cattle diseases and their treatment, (126).
Preventive Inoculation·
Compulsory, advocated, (106).
Practice of, (106)
Staff should mix more with cultivators and train people in using simple medicines and preparing medicines, (102).
Surgeons, appointment by Agricultural Department for work on cattle farms, suggestion, (105).

DWARKANATH SINGH, Rai Sahib Dadu, Taluqdar, Seoni: **(496-506)**, 32,674-32,895.
Animal husbandry operations, 32,805-12.
Area of villages and agricultural operations of, etc., 32,676-717, 32,788, 32,818-62.

DWARKANATH SINGH, Rai Sahib Dadu—*contd.*

AGRICULTURAL INDEBTEDNESS.
Causes of, (497-8).
Conciliation Boards, considerations *re*, and trial of, advocated. (499), 32,734-9.
Credit:
Easy obtaining of, evils of, (497), 32,743.
Sources of, (498).
Measures for lightening burden of debt, (499).
Moneylenders:
Passing of land into hands of, and evil, 32,791-2.
System, and evils of, (498), 32,728-33.
Mortgages, facilitation of redemption of, not advocated, (499).
Repayment, reasons preventing, (498).
Rise in value of land, effect, (497), (499), 32,741-3.
Transfer of land, suggestion for restriction, (499).
Usurious Loans Act, strict enforcement of, desirable, (499), 32,740

AGRICULTURAL INDUSTRIES.
Basket making, obstacles to development, (502).
Embroidery and hand work, suggestion for encouragement, (502).
Factors necessary for success, (502)
Fruit growing, prospects, (502).
Industrial concerns, removal to rural areas, objection to, (502).
Intensive study of rural industries, necessary, (502).
Lac culture, prospects, (502).
Measures proposed for encouragement, (502)
Poultry rearing, prospects of, and obstacle of religious sentiment of Hindus, (502).
Rope making, obstacles to development, (502).
Subsidiary industries, encouragement on co-operative lines advocated, (502)
Time spent by cultivators on holdings and occupation during slack season, (501-2), 32,863-74, 32,877-8

ANIMAL HUSBANDRY
Buffalo, cow preferred by small cultivators, 32,880-1.
Fodder shortage, period of, 32,875-6.

BULLOCKS·
Feeding of, 32,690-4.
Shortage of, 32,802-3.

CAPITAL, attracting of
proposed Measures for, (505).
Obstacles, (505).

CO-OPERATION
Cattle-breeding societies, proposals for establishment of, (504-5).
Central Bank, supervision of staff not satisfactory, (504).
Credit Societies
Extension, scope for, (498).
Fixing of credit limit, power to Government Auditor proposed, (504).
Loans should be used for productive purposes, (504)
Problem of agricultural indebtedness cannot be solved by, alone, (499).
Results, (505), 32,762-6.
Encouragement of growth of, proposed measures for, (504).
Extension of movement, scope for, and proposed measures for, (503-4).
Improvements, societies for, need for, (504).
Joint improvement schemes, minority should be compelled to join, (505).
Organisation by Government officials, proposal, (503-4).
Purchase Societies, desirability of, (504).
Sale societies, advocated, (500), (504).
Societies for better standard of living, formation proposed, (505).

DWARKANATH SINGH, Rai Sahib Dadu—*contd.*

CROPS :
Damage by wild animals and methods of prevention, (501).
Sann hemp, religious prejudice against, disappearing, 32,767-9
Seeds, distribution of :
Co-operative seed unions, proposed establishment of, (501).
to Tenants, by witness, 32,725-7.
Unsatisfactory nature of present method (501), 32,774-81.
Wheat.
Personal experience, 32,696-9.
Pissi, 32,788.

DEMONSTRATION AND PROPAGANDA :
Demonstration plots, inadequacy of number of, (496).
Factors influencing cultivators to improve practice, (496).

EDUCATION
Agricultural College Graduates, as managers of estates would be employed if available and pay that would be offered, 32,784-7.
Rural economics, degree in, might be useful, 32,760.

EXCISE, prohibition of liquor, Kayasth community would not object, 32,888-94

FERTILISERS
Artificial, ordinary cultivators unable to afford, 32,712-3.
Green manuring not successful, in personal experience, 32,716-7.

FINANCE
cheap Credit, danger of (497), 32,743
Cultivator's needs for capital, extent, 32,795-7
Land Mortgage Banks, considerations *re*, and establishment advocated, (496-7), 32,721-3, 32,793-4
Loans from Co-operative credit societies :
Increase in number of societies desirable, (496).
Value of system, (496).
Taccavi loans
proposed Modifications of system, (497)
System, (496), (498), 32,718-20
full Use not made of, and reasons, (497)

FORESTS, GRAZING
Fees, increase not desirable unless facilities were increased, 32,813.
Rates charged by malguzars, 32,798-801, 32,814-7.

HOLDINGS
Consolidation :
Attitude of malguzars, 32,770-3
Compulsion may be necessary when majority has agreed, (501)
through Co-operation, in Punjab, (500)
possible Methods, (500-1), 32,744
Obstacles to, (500)
Fragmentation of, evil of, (499-500)
Intensive cultivation, desirability of introducing through co-operative movement, (500).
Legislation dealing with minors, widows, etc , advocated, (501)
Legislation for keeping disputes out of court, advocated, (501).

IRRIGATION, Tanks, manurial substance in water from, question of, 32,699-700

MARKETING
Cotton :
in Berar, system and defects, (503), 32,745-6, 32,753-8, 32,884-7
Grading, need for, (503), 32,757-8.
Improvement, proposals for, (503).
Grain :
in Central Provinces, system and defects, (503).
Improvement, proposals for, (503).
Information to cultivators as to market conditions and rates, desirable, (503)

DWARKANATH SINGH, Rai Sahib Dadu—*contd.*

RAILWAYS, reduction of freight on improved implements advocated, (502).

RURAL ECONOMICS, ignorance of politicians and town people, (506), 32,759-61.

SOIL, fertility, decreasing, 32,705-9.

WELFARE OF RURAL POPULATION:
Economic survey of typical villages, importance of, and suggestions for, (505-6).
Health of cultivators, increased attention needed, (505)
Improvement of health condition by people, methods of encouraging, (503).

DYER, J. F., I.C.S., Commissioner, Chhattisgarh Division Note on Consolidation of holdings in Chhattisgarh, (152-60)
Agreement with, *Chhotelal* 29,107, *Burton* 29,108

Education:

ADULT
in Berar, position, *Khaparde* (400)
Deficiency of facilities and suggestion, *Deshpande* (297), 30,568.
Demand should be created if possible, *Beckett* 31,409.
little Demand for, *Beckett* 31,404, 31,405, 31,409, 31,518-26
by Demonstrators and at Government farms advocated, *Deshpande* 30,455-8.
Education through the eye and ear, advantage of, *Brahma* (242).
Encouragement of village or small circle agricultural associations, proposal, *Allan* (201).
Experiments made in connection with, failure of, but education of children of more importance, *Beckett* 31,404-5, 31,409, 31,518-26
in Jails, extension of experiment under consideration, *Beckett* 31,527.
Libraries and reading rooms in villages, establishment with Government assistance advocated, *Sahasrabudhe* (455).
Mr Mande's scheme, *Brahma* 29,920-3, *Khaparde* (400)
Means of popularising, *Plymen* (26), *Powar* (89), *Dubey* (101), *Allan* (200), *Brahma* (242); *Deshpande* (297); *Irwin* (342); *Dokras* (479).
Night schools·
Experiment tried by Sehora Central Bank, *Pande* 33,250-5.
Failure of, *Beckett* 31,496-8
Proposal, *Pandeya* (128), *Pande* (529), 33,250-5.
Proposals, *Allan* 29,668-70
Tapswi Babasaheb Prajanjpe's scheme, *Khaparde* (400).

AGRICULTURAL
Administration
by District Councils, Co-operative Central Banks and Village Panchayats, with co-ordination by Government, advocated, *Pande* (529).
by Education Department, but supervising staff should be recruited partly from graduates of Agricultural College, *Powar* (89).
on Akola farm, failure, *Plymen* (23).
Attendances, *Plymen* (26), *Deshpande* (296).
Attendances not satisfactory and reasons, *Dokras* (478); *Pande* (529).
Clubs, scheme for establishment in Vernacular and Anglo-Vernacular schools, *Deshpande* (297), 30,453-4, 30,560-3
College, Nagpur:
Affiliation to University, and effects, *Plymen* (21-2); *Allan* (208), 29,766-7.
Animal husbandry teaching, *Allan* 29,903-5.

Education—*contd.*
AGRICULTURAL—*contd.*
College, Nagpur—*contd.*
Assistants, time taken up by teaching, no time for research, *Allan* 29,633-5, 29,821-3.
Co-operative courses under consideration, *Trivedi* 29,514.
Cost per student per annum, *Allan* 29,837-8.
Course too scientific and should be more economic, *Plymen* 27,517, 28,177-8.
Courses, &c., *Plymen* (21-22), 27,939-43, 27,951-2, 28,174-6; *Allan* (209), 29,660, 29,689, 29,774-89, 29,881
Curriculum not suitable for small farmers, *Dubey* 28,631
Demand for admission, increase, *Allan* (199).
Extension will be necessary, *Allan* (198)
Farm, visits to, by teachers, *Allan* 29,794
Intermediate stage as entrance standard, objection to, *Allan* 29,689.
Lectures for revenue officers, etc, and question of extension occasionally, *Allan* 29,676-83, 29,790-7
Practical work after leaving, advocated, *Dubey* (100); *Sahasrabudhe* (453)
Practical work, opportunities for, needed, and proposal, *Deshpande* (297), *Irwin* 31,373, *Sahasrabudhe* (469), 32,438
Principal, work of, *Allan* 29,629-32
Research work, nature of, *Allan* 29,800
Research workers, too great proportion of time spent on teaching, *Plymen* 27,504-6
Rural Economics, Chair in, desirability, *Plymen* 27,515-7
Selection of candidates for admission, *Plymen* (26), *Allan* (199).
Staff, and close collaboration of research officers, *Allan* 29,624-8
Students
After careers, *Plymen* (21), 27,507-14, 27,854-7, 28,100-1, *Dubey* (100), *Allan* (200), 29,807-9
Employment by Court of Wards, *Allan* 29,846-8
Employment on estates or cattle farms, encouragement desirable, *Plymen* 27,509-10
Initial pay in Government service and prospects, *Allan* 29,876-9.
as Managers of estates, would be employed if available and pay that would be offered, *Dokras* 32,536-40, 32,594-9; *Dwarkanath Singh* 32,784-7
Prospects of those taking up farming, *Allan* 29,870-94
Quality of, *Allan* 29,685-8
Recruitment of co-operative staff from, under consideration, *Trivedi* 29,586-7
Small number taking to farming, reason, *Allan* 29,839-45.
Source of, *Dubey* (100).
Veterinary lectures and first-aid demonstrations, *Wilson* 30,913, 30,920, 31,006-8.
Colleges
Graduates, special concessions and grants of unassigned culturable land to, experiment might be tried, *Irwin* 31,289-91.
Groups to be catered for, and courses required, *Allan* (208-9), 29,657-62.
Collegiate or advanced, demand for, *Allan* (198).
as Compulsory subject in schools in rural areas, advocated, *Pande* (529).
Courses of study, modifications:
Advocated, *Pande* (529).
will be Carried out when called for, *Plymen* (26).
Demand for:
among Educated men, *Amanat Ali* 31,815-7.
Means of encouraging, *Allan* (198).

Education—*contd.*

AGRICULTURAL—*contd.*

Demonstration farms attached to all Vernacular middle schools and normal schools, advocated, *Pande* (529).
Demonstration plots managed by Department, probable value of, *Irwin* (342).
Facilities, *Plymen* (21-3), (25-6); *Pande* (529)
Inadequacy of, and need for extension, *Powar* (89); *Dubey* (100), *Brahma* (241), *Deshpande* (296), *Khaparde* (399); *Sahasrabudhe*, (453), *Dokras* (478), *Pochoiy* (516); *Pande* (529).
Farm school under construction, *Plymen* (26).
Farmers' attitude towards, *Plymen* (26).
Finance, charges should be charged on Land revenue, *Pande* (529).
on Government farms, *Plymen* (23).

in High Schools.
Advocated as compulsory subject, *Pandeya* (128).
not Desirable, *Dubey* (107).
as Optional subject, proposal, *Deshpande* (297), 30,454.
in Towns, undesirable, *Beckett* (369).
in Higher or collegiate education, suggestion *re*, as optional subject, *Pande* (538).
Home farm managers, difficulty of meeting applications for, *Allan* (200).
Importance of actual demonstration and propaganda in connection with, *Allan* (198), 29,759-60
Incentives, *Plymen* (26), *Powar* (89), *Allan* (199), *Brahma* (241); *Dokras* (479), *Pochoiy* (516)
Inclusion in school curriculum as class room or examination subject not advocated, *Allan* (209).

Institutions·
Needed in Berar, *Khaparde* (399).
One, in each district, advocated as necessity arises, *Khaparde* (399).
Sufficient for present demand, *Allan* (198).
Instruction of agriculturists on social economy advocated, *Pandeya* (125).

as Matriculation subject
Failure of experiment, and disapproval of, *Beckett* 32,600-3
Objection to, *Allan* 29,691-3.

in Middle schools, *Plymen* (35)
not Desirable, *Dubey* (107).
Proposal, *Pandeya* (128); *Dokras* (484-5).
in Normal schools, proposal, *Dubey* (101), *Deshpande* (297), 30,564-6, *Pande* (529)
Objects to be aimed at, *Deshpande* (296)
in Ordinary schools, considerations in connection with, *Beckett* (368).
Poona College, experience of, and opinion *re*, *Amanat Ali* 31,646-55, 31,714-6.

Post Graduate ...
Facilities, provision not advocated until prospect of posts, *Plymen* 28,264-5.
Students going abroad for, *Plymen* 28,262-3.
Powerkhera School, Hoshangabad· *Allan* 29,643-8.
Extension required, *Allan* (198).
Record of students, being kept, *Plymen* 27,520-2
Vocational course, *Beckett* 31,420
Practical training, importance of, *Korde* (317).
Prevocational or conducted as part of rural school general education.
Extension of demand for, *Allan* (198).
Extension, shortage of teachers would be difficulty, *Allan* (198).

Education—*contd.*
AGRICULTURAL—*contd*
in Primary schools·
Experiment tried, but failure owing to lack of proper type of teachers, *Brahma* (241), 29,910-4.
Possibility, *Brahma* (241).
Practical teaching advocated, *Pande* (538).
Proposal, *Pandeya* (128); *Bhargava* (430); *Dokras* (478-9), (485), 32,510-2, *Pande* (538)
Proposals, *Dokras* (478-9), (484-5).
in Rural Vernacular schools, *Plymen* (23).
Scholarships, suggestion for, *Pande* (529).
School farms and School plots, *see those titles below*
no Schools for agricultural teaching in the moffusil, *Brahma* (241)
Schools
little Demand for, *Powar* (89)
in Every big town advocated, *Dokras* (478)
in Schools, type advocated, *Allan* (199).
Seasonal classes, *Plymen* (23)
Short course of specialized adult training, facilities, *Allan* (198).
Short courses in, where experimental or demonstration farms available, advocated, *Brahma* (241)
Stimulation of demand for, means of, *Khaparde* (399)
Students
see also under College *above*
After careers, *Powar* (89), 30,609-11, *Deshpande* (297); *Khaparde* (400), *Dokras* (479), *Pande* (529).
Source of, *Plymen* (26), *Powar* (89), *Allan* (199), *Deshpande* (297), 30,505-8, *Dokras* (479)
Subsequent training, *Plymen* (26)
Technical knowledge, improvement of
Movement for, *Powar* (89)
no Movement for, *Deshpande* (297), 30,538-41, *Deshpande* (479), *Pande* (529)
subsequent Technical training
Difficulty, *Allan* (200)
Probationary posts, increased number suggested, as means of providing, *Allan* (200)
Teachers
Agricultural Training school in Berar, establishment advocated, *Sahasrabudhe* (453)
for Boys, inadequate supply, *Brahma* (241).
Class of, *Brahma* (241)
Confining of, to agricultural class with special training of methods advocated, *Korde* (317)
Course of agricultural education should be required before appointment in rural areas, in some cases, *Brahma* (241), 30,108-9.
Difficulty of obtaining right type and need for improved training, *Korde* 30,690-1.
Drawing of, from agricultural classes:
Advantage of, *Deshpande* (296)
Advocated, *Dokras* (478), *Pochory* (516).
Advocated, and enforcement of 25 years rules should be waived, *Pande* (529).
Only, rule not advocated, *Plymen* (26)
Importance of, *Irwin* (342), 31,287.
Insufficiency, *Powar* (89); *Deshpande* (296), *Pochory* (516).
Practical course necessary after leaving Agricultural College, *Sahasrabudhe* (453).
from Rural conditions generally preferable to town bred men, *Allan* (199).
Source of, unimportant, so long as practical training given by, *Dubey* (100)
Supply sufficient, *Dubey* (100); *Allan* (198).

Education—*contd.*
AGRICULTURAL—*contd.*
University, *Plymen* (21), (25-6).
in Vernacular Middle Schools:
Baloda Bazar and Champa, possible opening of demonstration plots for instruction, *Powar* (89)
Number of, in different provinces and number of scholars, *Sahasrabudhe* (455).
Possibility, *Brahma* (241).
Requirements for establishment of, and proposals, *Sahasrabudhe* (453).
Suggestions for introduction, *D'Silva* (370-2); *Beckett* 31,453-4.
in Village schools:
Cash return to children for output, proposal, *Allan* (200-1).
Development, scheme for, and probable cost, *Brahma* (242)
Practical work advocated, *Pandeya* (128).
Proposal for, *Powar* (89), 28,388-402
Teachers must be drawn from agricultural classes, *Powar* (89).
among Villagers, of main importance at present, *Brahma* (241).
Vocational
Demand for·
Anticipated, *Allan* (198-9), 29,646.
Extent of, *Allan* (198)
Failure of schools to attract class for which organised, *Allan* (198-9), 29,643
must be in Specialised institutions, *Beckett* (368), 31,422
Experiments and results, *Plymen* (22-3), 28,301-14
Yeotmal farm, students under bond to take up employment as teachers, *Plymen* (26)
Agricultural mottoes might be introduced into rural schools, *Beckett* 31,554-7.
Board composed of Directors of Public Instruction, Co-operative Credit, Public Health and Agriculture, might be useful, *Beckett* 31,492
Chemistry and physics, provision of equipment, *Beckett* 31,595-9.
Colleges, agriculture should be compulsory subject, *Pandeya* (128)
Criticism of, by parents, *Brahma* (250), 30,145-6
Defects of present system, *Sahasrabudhe* (468-9).
Defects of system in that indifference and sometimes aversion to agriculture created, *Dokras* (484).
Demand for, *Plymen*, 28,312, *Powar* 28,341-2; *Dubey* 28,484-5; 28,628-30, 28,685-8, *Deshpande* 30,464-6, 30,569-71; *Korde* 30,726; *Beckett* 31,433-6, 31,447-8.
Demand for, must be created, *Pandeya* 28,796-7.
DEPARTMENT
no Co-operation with Co-operative Department, *Trivedi* 29,505-7.
Officers of, assistance of Co-operative Department by, suggestions for, *Deshpande* (302), 30,581.
DEPRESSED CLASSES:
Attitude of, *Beckett* 31,503-4.
Question of sitting in same school as others, *Dokras* 32,530-2
Treatment of in schools, *Beckett* 31,563-6.
Director of Public Instruction, also Secretary to Government in the Education Department, and advantages of, *Beckett* 31,455-60.
FEMALE.
Advantages to be derived, *Irwin* 31,368.
Government schools, *Beckett* 31,589
Literacy, low percentage, *Beckett* 31,583-5
Primary, slowness of progress and steps being taken to encourage, *Beckett* 31,410-4
Secondary, progressing, *Beckett* 31,410.
Teachers, problem of, and supply, *Beckett* 31,586
Forest school, Balaghat, *Witt* 30,346-7.
Garden plots in rural middle schools, suggestions re, *Beckett* (369).
Gardening, advocated, *Bhargava* (430); *Sahasrabudhe* (453, 469).
High School Education Board, composition and functions, *Beckett* 31,493, 31,495.

Education—*contd.*

HIGH SCHOOLS.
Agricultural instruction, *see that title above.*
Manual instruction, *Beckett* 31,561-2.
Scale drawing, *Beckett* 31,558-60.
Situation in towns, *Beckett* 31,616-9.

HIGHER OR COLLEGIATE:
Agriculture as optional subject, suggestion *re*, *Pande* (538).
Farm economics should be studied, *Pande* (538).
Importance of, as means of extending interest of landlords in agriculture, *Allan* (208).
Influence on agricultural efficiency, *Beckett* (369).
no Radical change necessary, *Dubey* (107).
Illiteracy, relapse into, and methods of preventing, *Dubey* (107); *Pandeya* (128), *Irwin* 31,357-8; *Beckett* (369), 31,406-8.
Indian boys, question of powers of observation, *Beckett* 31,516, 31,604-5.
Industrial and agricultural bias, importance of providing for, *Sahasrabudhe* (468-9)
little Influence on agricultural efficiency or desire to take up agriculture, *Plymen* (34-5), 27,751-4
Interest in, by rural people, proposed measures for encouraging, *Sahasrabudhe* (453-4).
Low caste men, *Plymen* 28,228-31.

MIDDLE SCHOOLS:
Agricultural training, *see that title above.*
Elementary, no radical change necessary, *Dubey* (107)
Garden plots in, suggestions, *Beckett* (369).
Influence on agricultural efficiency, *Beckett* (369)
Nature study in, *Beckett* (368).
Rural, greater attention to training of hand and eye, utilizing rural industries and local life advocated, *Allan* (209).
one Minister for agriculture and, advocated, *Dokras* 32,492.

NATURE STUDY
Advocated, *Sahasrabudhe* (469), *Pochon y* (516).
Advocated and proposal *re*, *Dokras* (479)
Approved, *Deshpande* (297), *Konde* (317).
as Compulsory subject advocated, *Khaparde* (399).
in Fields desirable, and schools plots and farms desirable, *Brahma* (241), 30,151-2.
Plots attached to normal schools, *Powar* (89).
in Rural middle schools, *Beckett* (368)
in Rural schools, advocated *Bhargava* (430).
in Schools, of little value, *Brahma* (241), 29,916, 30,151.
present System of little practical use, *Pande* (529).
Teachers, difficulty of obtaining, of right type, and proposal, *Allan* 29,740-5, *Beckett* 31,415-8
Value, extent of, *Plymen* (26), *Allan* (199).
Valueless, *Irwin* (342).
NORMAL SCHOOLS, *Beckett* 31,419, 31,485-91.
Nature study plots attached to, *Powar* (89).

PRIMARY:
Agricultural teaching, *see under* Agricultural *above*
greater Attention to training of hand and eye, utilizing rural industries and rural life advocated, *Allan* (209).
Classes of schools, *Beckett* 31,588-91.
Compulsory:
would be more Acceptable if subsidiary industry taught, *Plymen* (35).
Apathy of people towards, and means of encouraging interest, *Pandeya* (128).
Compulsory establishment, proposal for Government encouragement, *Sahasrabudhe* (453).
not Desirable in rural areas, *Dubey* (107-8).
Extent to which put into force, *Brahma* 30,147-9.

Education—*contd.*

PRIMARY—*contd.*

Compulsory—*contd.*

Extent of, method of working and results, *Beckett* (369-70), 31,425-6, 31,429-32, 31,470-2, 31, 505-11, 31,537-46.

Failure of, in Akola, *Korde* (320).

Formation of co-operative societies for, desirable, *Trivedi* (172), 29,436-7.

Free, definite policy of, *Beckett* 31,468-9.

entirely Free, small fee charged for optional education, *Beckett* 31,437-42

Importance of, *Beckett* 31,425-32.

Management and inspection of schools, *Beckett* 31,478-81, 31,611-2.

in Municipalities, *Beckett* 31,425, 31,609-10.

Need for, *Sahasrabudne* (469)

Position *re*, and proposals for increase in attendance, *Sahasrabudhe* (454-5), 32,454-6.

Raising of age limit to 15 advocated, *Korde* (320), 30,882.

Reasons for slow progress in Berar, *Brahma* (250), 30,128-32.

not Satisfactory as agriculture not included, *Dokras* (485).

not Compulsory, Jubbulpore division, *Irwin* 31,336.

Curriculum must be such as to create agricultural and industrial bias in minds of boys, *Sahasrabudhe* (453).

Education not designed to fit boys for work in fields or create agricultural bias, *Brahma* (241)

Establishment, survey made of needs and policy *re*, *Beckett* 31,499-500.

no Fees charged, *Irwin* 31,130-4.

Financing of, *Beckett* 31,449-52, 31,515, 31,591-4.

Free, advocated, *Korde* 30,880-3

Functions of, and removal of illiteracy must be chief aim, *Beckett* (368)

Gardening instruction, proposal, *Sahasrabudhe* (453)

Holidays, coincidence with busy season in fields, in many areas, *Beckett* 31,606-8.

Hygiene, instruction in, *Stiles Webb* 31,951-3, 32,012-4.

Influence on agricultural efficiency, *Beckett* (369).

Leakage between lower and fourth classes, and causes of, *Plymen* (35); *Brahma* (250); *Powar* 28,395-400; *Korde* (320); *Irwin* 31,330-5, *Beckett* (370), 31,511-4; *Dokras* (485), *Pande* (538).

Literacy should be first objective, *Irwin* 31,062-3

Practical teaching in agriculture advocated, *Pande* (538).

Schools, sweepers and water carriers not provided in, *Irwin* 31,341-2.

Small proportion of boys in schools, reasons, *Dubey* (108).

Teachers.

Class of, and qualifications, *Beckett* 31,533, 31,534-6

Difficulty and importance of right type, *Allan* 29,663-7.

Pay, *Korde* 30,801; *Beckett* 31,416-8, 31,474-5.

Pay and qualifications and method of appointment, *Bhargava* 32,292-7.

Pension or provident fund, *Beckett* 31,482

Time spent by, in trying to obtain attendances, *Irwin* 31,335.

Training of, *Beckett* 31,483-91, 31,530-2.

Vernacular primers, *Beckett* 31,613-5.

Robertson Medical School, *Stiles Webb* 32,116-9.

RURAL.

must be in Conformity with needs of agriculturists, *Pande* (538)

Elasticity necessary, *Plymen* (35).

Improvement of ability and culture of agriculturists, proposals for, *Allan* (209).

general Policy, *Plymen* (22).

Education—*contd*

RURAL ECONOMICS :
Degree in, might be useful, *Dwarkanath Singh* 32,760.
should be Studied in University and results taught in primary and secondary schools *Brahma* (247).
Scholarships for special training in England, and results, *Beckett* 31,567-74.

SCHOOL FARMS
Advocated, *Dokras* (479), *Pochory* (516).
Approved, *Deshpande* (297).
should be Associated with places giving vocational training, *Plymen* (26), *Allan* (199).
in Middle and High Schools, of little value, *Dubey* (100-1)
in Primary schools, valueless, *Dubey* (100).
Unsuitability to rural school needs and conditions, *Allan* (199)
Valueless, *Irwin* (342).
Valueless for young boys, *Plymen* (26).
Work on, should be optional, *Khaparde* (399)

SCHOOL PLOTS
Advocated, *Dokras* (479), *Pochory* (516).
Approved, *Deshpande* (297)
at Primary schools in rural areas
Advantageous, *Dubey* (100)
Flowers and vegetables should be grown *Dubey* (100), 28,635-6
at Ramandgaon, *Allan* (199)
Requirements for success, *Allan* (199)
in Rural middle schools, *Beckett* (368), 31,548-53
Proposal for, *Allan* (209)
on Small scale, useful, *Khaparde* (399)
Value of, opinion *re*, *Plymen* (26)
Valueless, *Irwin* (342).

Schools, boys overworked in, and course of study should be revised, *Khaparde* (399)
Schools started partly for agricultural instruction, control by agriculture Department and financing by fees, donations and Government grants advocated, *Khaparde* (400)
Sciences, extent of, *Beckett* 31,463-7
Secondary teachers, qualifications, *Beckett* 31,533
present System, interest in agriculture not encouraged by, *Pandeya* (127-8).

TEACHERS :
see also under Agricultural *and* Primary *above*
Attitude of, importance of, and requirements, *Sahasrabudhe* (469-70).
Drawing of, from rural classes
Desirable, but should not be insisted on, *Brahma* 30,063-5
in Rural Areas, advocated, *Khaparde* (399).

UNIVERSITY
Agriculture, Faculty of, *Plymen* 28,062-4, *Allan* 29,768-73
Graduates, after careers, *Beckett* 31,578-82

VERNACULAR MIDDLE SCHOOLS
Agricultural instruction, *see that title above.*
Control of, *Beckett* 31,495.
Financing of, *Beckett* 31,449-52
Number increasing, *Beckett* 31,494
Veterinary Studies, Board of, need for, *Wilson* 30,913.

Empress Mills Co-operative Stores Ltd.:
Grain marketing system, *Peterson* (445-6), 32,395-6
Sources of grain, *Peterson* 32,399-401.

Excise:
Department, officers of, assistance of Co-operative Department by, proposals for, *Deshpande* (302), 30,581.
Intoxicating liquor and drugs, decreasing consumption, *Irwin* 31,283-5.
TOTAL PROHIBITION OF ALCOHOL:
Advocated, *Dokras* 32,570-80, 32,615-7.
Kayasth community would not object, *Dwarkanath Singh* 32,888-94.

Famine, none for many years and reason, *Plymen* 27,978-81

Fertilisers:
Adulteration, proposed preventive measures, *Plymen* (29), *Dubey* (104), 28,750; *Deshpande* (301), *Dokras* (481), *Pande* (531).
AMMONIUM SULPHATE:
Increased use of, *Plymen* (29), *Allan* (203).
Successful use on sugarcane, *Bhargava* (428).
free or cheap Analysis of soil for cultivators, proposal, *Dokras* (481)
ARTIFICIAL.
ordinary Cultivators unable to afford, *Dwarkanath Singh* 32,712-3.
Drawback of, as compared with natural manures in India, *Deshpande* (300).
in Dry farming, cost not compensated for by increase in yield, *Amanat Ali* (386), 31,832-8.
Experiments made but price too high to be paying and irrigation necessary, *Pande* 33,218-27.
Increased use of, scope for, *Plymen* (29), *Allan* (203).
Increased use of, scope for, and methods of encouraging, *Pande* (531).
Investigations, *Plymen* (29).
Preparation by Government and distribution at cheap rate, suggestion, *Sahasrabudhe* (462).
Price, importance of reduction, *Plymen* (29).
Sale through licensed sellers under control of Department of Agriculture, *Deshpande* (301)
Supply from depots on Government Farms after analysis advocated, *Dubey* (104), 28,750
Useful for certain crops, *Powar* (91).
Ashes, instruction of cultivator in use of, advocated, *Khaparde* (402)
BONEMEAL:
Export, *Plymen* 28,030-1.
Satisfactory for paddy, but caste prejudice a difficulty, *Powar* (91).
not Used to any large extent, *Plymen* 28,030-1.
Bones, grinding up of, and use in Province desired instead of export, *Plymen* 27,617-22, *Dubey* (104).
Cakes, increased use of, *Allan* (203)
CATTLE URINE
Instruction of cultivator in use of, proposal, *Khaparde* (402), *Sahasrabudhe* (462).
Non-use of, *Powar* (91).
Pits round villages for collection of, should be compulsory, *Bhargava* (428).
Preservation of, proposal for regular and continuous propaganda to encourage, *Brahma* (244).
COWDUNG:
Collection from forests, *Witt* 30,275-6.
Instruction of people in use of, advocated, *Kharparde* (402); *Sahasrabudhe* (462).
Pits round villages for collection of, should be compulsory, *Bhargava* (428).
Plastering of walls with, *Amanat Ali* 31,794.
careful Preservation necessary, *Powar* (91).
Use as fuel *Powar* (91), *Dubey* (104), *Pande* (531)
Attempts to encourage use of fuel in place of, *Plymen* (9); *Witt* (278).

Finance—*contd.*

LAND MORTGAGE BANKS—*contd.*
Opinion *re* proposal, *Sahasrabudhe* (459).
Resolution of Conference of Registrars of Co-operative Societies, January, 1926, should be given effect to, *Brahma* (243), 30,040-41
Land mortgage credit on co-operative basis, development of on large scale necessary, and suggestions for, *Deshpande* (298-9), 30,467-74, 30,624-30

LOANS TO CULTIVATORS
through Co-operative Societies and realisation of amount so advanced as arrears of land-revenue, scheme, *Brahma* (243).
Extension, suggestions, *Dubey* (102).
under Government control, suggestion, *Dubey* (102)
from Government treasuries, scheme, *Brahma* (243).
by big Landlords on moderate or nominal interest should be encouraged, *Pandeya* (125).
of Money and seed to cultivators without interest by societies and farms advocated, *Pandeya* (125)
Seed, manure and implements should be supplied through Agricultural Department on greater scale, *Dubey* (102), 28,767.

LONG TERM CREDIT
Facilities should be established, *Pande* (530)
Government should advance loans, *Pochory* (516), *Pande* (530)
Money must be provided at cheaper rate in order to make farming pay, *Deshpande* 30,536-7.

SHORT TERM LOANS
Co-operative credit societies should advance, *Pande* (530).
Establishment of village Co-operative Societies advocated, *Brahma* (243).

Taccavi LOANS
Advisory Committee appointed in each district or Tahsil to advise at time of giving and realising would increase popularity of, *Bhargava* (327).
Allotments, no refusal known, *Irwin* 31,353-4
Applications usually granted if request reasonable, *Dwarkanath Singh* 32,719, *Pochory* 32,924-5.
Approved, *Pandeya* (125).
to Co-operative Societies' members, agency of Co-operative Central Banks and Societies should be employed for, *Brahma* (246)
through Co-operative societies
not Desirable, *Irwin* 31,307, 33,426-48
Proposed, and scheme for, *Pande* 33,264-82, 33,353-4.
Question of possibility and method, *Trivedi* 29,430-2
Criticism of procedure and proposed modifications, *Dubey* (102-3); *Korde* (318), *Khaparde* (401), *Sahasrabudhe* (459)
Elastic system not possible to any extent, *Irwin* 31,305-6.
Extension, special officer to deal with, in each district, proposal, *Allan* (202).
Extension of system
Objections to, *Irwin* (343).
Suggestion, *Dubey* (103).
Failure to take up, owing to desire to remain on books of money-lender, *Irwin* (343), 31,072-4.
for Implements, for long terms at low rates desired, *Pochory* 33,056-8.
Issue
Appointment of special officers, proposal, *Plymen* (28), 28,103.
Delay, *Pande* (530), 33,262-3
little Delay, *Irwin* 31,180.
in Kind
Extension of system desirable, *Plymen* (28).
Proposals, *Powar* (90); *Pochory* (516), 33,069.
little Leakage before reaching cultivator, *Irwin* 31,178-9.
Method of realising, criticism, *Pandeya* (125).

Finance—*contd.*

Taccavi LOANS—*contd.*
proposed Modifications of system, *Korde* (318); *Amanat Ali* (386); 31,692; *Dwarkanath Singh* (497), *Pande* (530).
Objections to, *Allan* (202).
Obstacles to greater use of, *Pande* (530), 33,408-10, 33,437.
Remission of interest on instalments when land revenue remitted, *Plymen* 27,576-7.
Remissions, loss on account of, not believed to be heavy, *Plymen* 28,105.
Speed the important thing, *Plymen* 28,104.
Supervision of use of loan, proposal, *Khaparde* (401), *Pochory* (516), 32,923, 33,070-3.
should be Suplementary to loans by credit societies, *Powar* (90).
System, *Dwarkanath Singh* (496), (498), 32,718-20.
System and statistics, *Plymen* (8).
Terms should be according to needs, *Korde* (318)
Unpopularity and reasons for, *Plymen* (8), *Bhargava* (427)
full Use not made of, and reasons, *Dwarkanath Singh* (497)
Village banks, formation of, and exemption from Indian Companies Act under certain circumstances, proposal, *Brahma* (243), 29,932-8, 30,068-82, 30,115-6, 30,153-7

Fish culture and fishing, *see under* **Agricultural Industries.**

Fodder, *see under* **Animal Husbandry.**

Food grains, difference in prices in rice or wheat tract and cotton tract, *Plymen* 28,292-4.

Forests:

AFFORESTATION
no Need for further operations, *Pande* (537).
not Needed in Central Provinces, *Witt* (278)
Schemes in neighbourhood of villages, opening for, where fodder and fuel supplies scarce and where waste land exists, *Plymen* (33).
in Village area, expense prohibitive, *Irwin* (346).
Area and reduction in, for cultivation, 1906-07, 1916-17 and 1925-26, *Witt* (277).
Areas available for cultivation, *Witt* (276).

BALED HAY FROM:
Berar, experiment made but non-success of, *Irwin* (346).
Cost of baling, *Witt* 30,356-7.
probable Demand for, *Plymen* (33), 27,719-24.
Distribution, method, *Witt* 30,358-60.
Experiments in supply of, for stall feeding, and absence of demand, *Plymen* (8); *Witt* (273-4), 30,174-6, 30,260-8.
Large amount possible but difficulty of transport, *Allan* (208).
Quality, *Witt* 30,355.
Reserves, extension of system, suggestion, *Plymen* (31).
no Sale for *Allan* 29,707.
Storage possibilities, *Witt* 30,177-83, 30,290-5.
no Casuarina, *Witt* 30,423-5.
Cattle-breeding areas, proposal, *Plymen* (33), 27,718, 28,201
Construction and repair of wells, tanks and anicuts, *Witt* (276).
Cowdung, collection by people, *Witt* 30,275-9.
Cutting and preserving fodder on large scale, Forest Department should carry out, but increased staff would be necessary, *Witt* 30,173.

DEPARTMENT:
Contact with Revenue Department, *Witt* 30,331-2, 30,349.
Forest guards, foresters and rangers, training and pay, *Witt* 30,345-8.

Forests—*contd.*

DEPARTMENT—*contd.*
young Officers, attachment of, to Agricultural Department, scheme not considered necessary, but not objected to, *Plymen* 27,726-8.
Relations with Agricultural Department, *Plymen* 27,718; *Witt* 30,349, 30,211-2.

DETERIORATION:
Causes, *Witt* (278).
from Excessive grazing doubted, in Central Provinces, *Irwin* (346), 31,089-90.
Floods in Central Provinces not due to, *Witt* (278).
no definite Investigation being carried on, *Witt* 30,354.
will not be Serious if grazing not largely extended, *Witt* 30,354.
Soil erosion from, not serious, *Pande* (537).

Extraction of minor forest produce and system of working, *Witt* (275), 30,272-4, 30,319-26, 30,368-9, 30,377-80.
Felling of trees within 20 yards of either bank of streams in certain areas forbidden, *Witt* (278), 30,371-2.
Firewood and fodder supplies, *Irwin* (346).
Fodder and thatching grass, supply, *Plymen* (8-9).
Forest Engineer, question as to scope for, *Witt* 30,381-3, 30,408
Forest produce, facilities should be allowed to villagers to make use of, *Sahasrabudhe* (467).

FUEL:
Cost, question of possibility of reducing, *Witt* 30,365-7
Encouragement of use of, in place of cowdung, attempts and failure, *Plymen* (9)
Increase of areas of *babul bans* desirable as means of increasing supply, but tendency rather to reduce, *Witt* (278), 30,282-9, 30,330, 30,401-3, 30,421-2.
Karanja trees not very suitable, *Witt* 30,420.
no Scarcity except in Berar, *Witt* (278).
Supply, *Bhargava* 32,218-22
Supply to villagers, proposal, *Sahasrabudhe* (467)

Fuel and other produce, methods for supply of, to cultivators, and failure of certain experiment, *Plymen* (9), *Witt* (275), 30,185-95, 30,232-6, 30,319

GRASSES.
Quality of, *Witt* 30,300.
some Research carried out, but not by Department, *Witt* 30,350-3
Sale of fodder and thatching grass from closed coupes, *Witt* (274), 30,297, 30,342.
Seeds of superior kinds of, should be supplied, *Pande* (537)
Use for stall feeding, Nimar district, *Witt* (278)

GRAZING
Areas should be freely opened for, *Pande* (537).
Average annual value of concessions in Central Provinces, *Witt* (278).
where not Allowed cultivators should be allowed to cut grass free, *Bhargava* (430).
Buffalo:
more Damage done by, than by bullocks, *Witt* 30,309-11.
Tax on should be same as on cow or bullock, *Pochory* (517), 32,943-6.

Concessions should be increased, *Bhargava* (430).
Dear grazing and cheap fodder.
Effect of cheap fodder policy on keeping of useless cattle, possible danger, *Witt* 30,312-4.
Policy advocated, *Witt* (277-8), 30,244-52, 30,417.
Excessive, remedies for, in Central Provinces, *Witt* (278).
Facilities, *Witt* (277), 30,342-4.
Increase advocated, *Pande* (537).
Facilities *v.* preservation of reserve of timber, *Irwin* (346)

Forests—*contd.*

GRAZING—*contd.*

Fees:

Fixation of, *Witt* (272), 30,241-3, 30,318, 30,361

Increase not desirable unless facilities are increased, *Dwarkanath Singh* 32,813.

Minimum rate should be charged, *Pande* 33,502.

Rate paid to, *Amanat Ali* 31,859-62.

Reduction, undesirability of, *Witt* 30,196-8.

Free, for agricultural cattle proposed, *Pochory* 32,977-81.

Goats and sheep, restrictions, *Witt* 30,199.

Number of cattle grazing in Central Provinces and revenue realised, 1922-23, 1923-24, 1924-25, *Witt* (272-3).

Policy, *Witt* 30,302-11, 30,317.

Opening of additional areas for, not desirable, *Plymen* (31), (33).

Increased Provision desirable and policy advocated *re*, *Sahasrabudhe* (466-7).

Provision of facilities by mulguzars and rates charged, *Dwarkanath Singh* 32,798-801, 32,814-7; *Pande* 33,504-14.

Restriction, *Witt* (273).

Scheme for areas for cattle breeding, *Allan* 29,700

Settlements in certain tracts and need for extension, *Witt* (278)

Statistics of areas, revenue from fees, &c, *Sahasrabudhe* (467), 32,466-7

Statistics of cattle grazed and rates paid for 1924-25, *Witt* 30,413-6, (295).

Hay from, supply available and need for utilisation, *Irwin* (345)

INDUSTRIES:

Development possible as result of research work being done at Dehra Dun, *Witt* 30,377.

Utilisation officer to be appointed for a few months, *Witt* 30,378

Labour, system, *Witt* 30,202-7, 30,333-9.

Lac propagation and cultivation, and Government policy, *Witt* (275), 30,216-25, 30,272, 30,323-5, 30,368-9, 30,379

Leasing of areas for cultivation, cattle breeding and dairying purposes, proposal, *Pande* (537)

Light railways, *Witt* 30,254-7, 30,315-6

Management of portion of area by Panchayats, proposal, *Sahasrabudhe* (467).

Match factory, question as to prospects of supply of timber for, *Witt* 30,393-400.

Myrobalams, revenue from, *Witt* 30,386-92, 30,427.

Natural generation, *Witt*, 30,259.

Planting of shrubs or trees by cultivators, doubted, *Plymen* 27,730-1.

Relations of forestry to agriculture, *Witt* (271-2), (276), 30,213-5

Revenue made by, and freer hand to spend money on useful projects desired, *Witt* 30,237-40, 30,258.

ROADS:

Construction advocated, *Pande* (537).

Construction, particulars *re*, expenditure on, &c., *Witt* (276)

Nature of, *Witt* 30,408.

Use of, by general public, *Witt* (276), 30,340-1.

Sericulture, position, *Witt* 30,226-31, 30,368-9.

Shifting cultivation, negligible, *Witt* 30,172, 30,334.

Sleepers, supply, *Witt* 30,254-7, 30,269-71.

Slopes, working of, *Witt* 30,409-12.

Stray cattle in, from hilly *malguzari* villages, penalty and reduction advocated, *Pochory* (517), 32,956-63.

Tanning materials, *Witt* 30,426-8.

no Tea cultivation, *Witt* 30,280-1.

Tiger population, *Witt* 30,327-9.

Trees, commercial, *Witt* 30,253

full Use not being made of, for agricultural purposes and proposals, *Pande* (537).

Forests—*contd.*

Villages, system, and cultivation in, *Witt* 30,208-10, 30,333-9.
Working, methods of, and preparation of working plans, *Witt* (271-2).
Working plans, new establishment for drawing up and revision of, *Irwin* (346).

Fruit growing:

Caste objections, *Irwin* (345).
Desirable, *Dubey* (106).
Difficulty one of capital rather than caste prejudice, *Irwin* 31,110.
Difficulty for lack of roads, water supply and unsuitable climatic conditions, *Bhargava* (430).
Encouragement, proposals for, and steps taken, *Plymen* (32), 27,697-701.
Position *re*, *Plymen* 27,801-5.
Prospects, *Plymen* 28,045-50, *Dwarkanath Singh* (502)
Requirements for success, *Khaparde* (405-6)
Research, need for expert for, *Allan* 29,734-7.
Water supply difficulty, *Khaparde* (405-6), *Sahasrabudhe* (464)
Watermelons, personal experience, *Dubey* 28,499-502

Gadawara Agricultural Association:

Evidence on behalf of, *see* Pochory, Kaluram, (516-518), 32,896-33,184.
Membership, objects, &c., *Pochory* 33,097-108, 33,125-32

Grain, *see under* **Marketing.**

Gram, *see under* **Crops.**

Grazing, *see under* **Animal Husbandry** *and* **Forests.**

Groundnut, *see under* **Crops.**
Gur, *see under* **Sugar.**

Holdings:

CONSOLIDATION OF
Advantageous, *Pandeya* (125).
Arbitration Societies, establishment of, as in the Punjab, advocated, *Brahma* (244)
by Arbitration, might be possible in some cases, legislation may be necessary, *Dubey* (103), 28,616-9.
Attempt not advocated, *Dobias* (481), 32,567-9.
previous Attempts, particulars of, *Dyer* (152-3), *Chhotelal* 29,100-2; *Burton* 29,104-5, 29,108-11.
Complete, neither possible nor desirable, *Dyer* (152).
Compulsion, some power of coercion desirable, *Irwin* (346).
through Co-operation
Formation of societies, possibility of in Bilaspur but not in other parts, *Trivedi* (171-2), 29,332-3.
might be Possible, *Brahma* 29,997-9.
in Punjab, *Dwarkanath Singh* (500).
as in Punjab not considered suitable to conditions, *Powar* 28,334-40.
Success doubted, *Dyer* (160), *Burton* 29,129-30, *Chhotelal* 29,166-7.
Suggested, *Irwin* (344).
Demand of cultivators for, *Chhotelal* 29,119-21
Desirable, *Dubey* (103).
Difficulty greater than in Punjab, *Pande* 33,292-3.
Mr. Dyer's proposal approved, *Powar* 28,333.
by Exchange:
Legal difficulties, *Powar* 28,376-81.
Scheme, *Korde* (318-9).
Importance of, *Plymen* 27,715-7, *Deshpande* (303).
by *Khars*, necessary, *Dyer* (152).
Labour problem would be affected by, *Plymen* (4).
Legal difficulties, *Dyer* (155-6).
Legislation necessary, *Plymen* 28,214-5; *Pollard-Lowsley* 28,909-10; *Pande* (531).

Holdings—*contd.*

CONSOLIDATION OF—*contd.*

Legislation that no contingent interests should interfere with, desirable, *Irwin* (344).

Legislation necessary to compel obstructive minority to join and proposal *re*, *Dyer* (156-7); *Chhotelal* 29,114, 29,115, 29,164-7, 29,175-8, *Burton* 29,114-6, *Dwarkanath Singh* (501).

Legislation to provide for free transfer of existing rights necessary, *Dyer* (155-6), *Chhotelal* 29,112-3, *Burton* 29,131-5.

Malguzar's attitude, *Burton* 29,122, *Dwarkanath Singh* 32,770-3.

Measures taken for, *Powar* (91).

possible Methods, *Dwarkanath Singh* (500-1)

Necessary for obtaining full benefit of irrigation, *Pollard-Lowsley* (133), 28,909.

Obstacles in way of, *Plymen* (2); *Dyer* (155-6), *Burton* 29,136, *Irwin* (344), *Dwarkanath Singh* (500), *Pande* (531).

Opposed by ryot class, favoured by malguzar class, as a rule, *Pandeya* (125).

Position *re*, *Plymen* (2), 28,208-13

Private, particulars of, and disadvantages and advantages, *Dyer* (153-5).

proposed Procedure, *Dyer* (157-60); *Burton* 29,150-1; *Chhotelal* 29,152-201.

Revenue officers should have instructions and power to compel, by exchange, *Bhargava* (428)

by Revenue staff, impossibility, *Dyer* (157).

in Ryotwari villages, and application of water-course system of irrigation, proposal, *Dyer* (159); *Burton* 29,123-8

Special legislation and special staff needed, *Plymen* (2)

Special staff for, proposal, *Dyer* (157), *Chhotelal* 29,118.

Staff for, need for careful selection, *Dyer* (152)

Steps being taken, *Korde* 30,858-63, *Chhotelal* 29,137-49, 29,153-4, 29,157-60.

Visit of Mr. Roughton and others to the Punjab in connection with, *Trivedi* 29,433-5, 29,440-1.

Voluntary.

Failure of, *Pande* (531), 33,289-93.

Success doubted, *Pande* (537).

FRAGMENTATION OF

owing to Effects of practice of *lakhabata*, *Powar* (91); *Dyer* (152).

Evils of, *Pandeya* (125) *Dyer* (152); *Trivedi* (171); *Bhargava* 32,349; *Dwarkanath Singh* (499-500).

below 5 acres should be prohibited, *Dokras* (481), 32,569

Hindrance to development of irrigation, *Pollard-Lowsley* 29,032.

Improvements by landlords hindered by, *Allan* (210).

Judicial Village Panchayats for settlement of money claims and leasing of money suits, proposal, *Brahma* (244).

Problem not serious in Berar, *Khaparde* (402).

Remedy for, up-to-date methods on consolidated and large holdings, *Dwarkanath Singh* (500), 32,744.

Serious problem only in Chhattisgarh Division, *Plymen* (1-2).

Stopping of, no suggestion for, *Bhargava* (428)

Suits filed after 12 years by reversioners claiming estate after widow's death should be barred, *Brahma* (244).

Intensive culture, desirability of introducing through co-operative movement, *Dwarkanath Singh* (500).

Joint farming societies, should be tried, *Pande* (537).

LEGISLATION DEALING WITH MINORS, WIDOWS, &C.:

Advocated, *Pandeya* (125), *Brahma* (244); *Dwarkanath Singh* (501).

not Advocated, *Dokras* (481).

not Necessary in Berar, *Khaparde* (402).

not Possible, *Bhargava* (428).

Holdings—*contd.*

Legislation for keeping disputes out of court, advocated, *Brahma* (244); *Duarkanath Singh* (501).
Legislation necessary for extending right of pre-emption, *Pande* (531)
Rice, sub-division beyond limit of four acres should be prohibited, *Dubey* (103), 28,615.
Small, certain advantages, *Khaparde* (402).
Small size of, drawback of, *Plymen* 27,523-4.
Tenancy and Land Revenue Acts, changes needed, *Pande* (531).

Implements:

Agency for supply of, *Plymen* (17).
Agricultural Engineer, *see under* Agricultural Department.
Distribution, obstacles in way of, *Bhargava* (429), *Dokras* (483).
Distribution and sale by Co-operative Societies and local bodies suggested, *Brahma* 30,157-61, *Pande* (533).

IMPROVED.
Assistance of intelligent cultivators with, suggestion, *Pochory* (516).
Extension of use of, statistics, *Plymen* (17).
Means of hastening adoption of
Convincing cultivators of usefulness, *Dubey* (105)
Costly machines should be kept at convenient centres for free trial or on moderate hire, *Korde* (319).
Demonstration of implements and sale on hire-purchase system, *Bhargava* (429).
Demonstrations, *Powar* (92); *Allan* (206); *Plymen* (307), *Korde* (319), *Irwin* (344); *Khaparde* (404); *Dokras* (483); *Pochory* (516); *Pande* (533).
Easy terms for payment in instalments, *Deshpande* (301)
Expansion of *taccavi*, *Allan* (206).
Importation by Government and sale at cost price, *Pochory* (517).
Price must be reasonable, *Plymen* (30), *Irwin* (344).
Repair facilities, *Irwin* (344), *Bhargava* (429), *Pande* (533)
Spare parts must be available and prices of parts must be reasonable, *Dokras* (483); *Pande* (533).
Training of mechanics, *Dokras* (483).
Undertaking of work with, by parties organised by Agricultural Department, and sale, etc., of implements by, scheme, *Brahma* (244).
Ploughs, introduction, *Powar* 28,406-8; *Brahma* 30,112-3.

IMPROVEMENTS.
Lines on which improvement desirable, *Allan* (206), 29,900-2
Scope for, *Powar* (92)
Unsuitability of implements of western manufacture to Indian needs, *Allan* (206), 29,895-9.
Work carried out, *Plymen* (13).
Investigation, importance of, and difficulty of carrying out, *Allan* (197), (198).
Labour-saving machines, results of introduction, *Pande* (537).
Light iron ploughs, manufactured in India, material inferior, *Powar* 28,408.
MANUFACTURE IN INDIA: *Plymen* (17), *Khaparde* 31,888
Encouragement desirable, *Sahasrabudhe* (463).
Government should start workshop for, *Pochory* (517), *Pande* (533)
Measures for encouragement of, *Deshpande* (301-2); *Khaparde* (404).
Private firms should be encouraged in, *Pande* (533).
Motor tractors, useful in some districts, *Pochory* 33,154

NEW:
Forcing of, on cultivators, objection to, *Khaparde* (404).
Requirements, *Sahasrabudhe* (463).
Use of, *Sahasrabudhe* (463).

NEW AND IMPROVED, proposals for
to enable Automatic regulation of sowing, *Khaparde* (404).

Implements—*contd.*

NEW AND IMPROVED, proposals for—*contd.*
of Indian hoe, *Khaparde* (404).
Light harrow for work in beginning of monsoon, *Bhargava* (429).
Reapers, *Bhargava* (429).
Seed drills, *Bhargava* (429).
Tifan, *Khaparde* (404).
Threshing machine, *Bhargava* (429).
for Weeding and inter-cultivation, need for, *Sahasrabudhe* (463)
Obstacles in way of increased use of machinery, *Brahma* (242); *Pande* (533).
Railway rates, concessions advocated, *Deshpande* (301), *Dokras* (483), *Dwarkanath Singh* (502).

REPAIR:
Difficulty and need for establishment of centres for supply of spare parts and repair work, *Brahma* (242).
Facilities, need for, *Irwin* (344); *Bhargava* (429); *Pande* (533)
Mechanical schools for training of mechanics, proposal, *Dokras* (483).
Steam tackle outfit for ploughing, use of, and results, *Bhargava* 32,269-75.
Sugarcane mills, suitable for small cultivators, need for, and suggestions, *Dubey* (105).
Taccavi loans for, for long terms at low rates desired, *Pochory* 33,056-8.
Timber for, no difficulty in obtaining, by ryots, *Plymen* 27,789-93

TRACTORS:
Non-success with, *Bhargava* 32,272, 32,286
Obstacles to use of, *Khaparde* (404).
Popularisation, proposal for, *Dokras* (483)
Types sold, *Plymen* (18).
Victoria Technical Institute, Amraoti, *Sahasrabudhe* (463).

Improvements, factors discouraging landowners from carrying out, *Plymen* (35); *Allan* (210), *Korde* (320), *Khaparde* (407-8); *Bhargava* (430); *Dwarkanath Singh* (505); *Pande* (538), 33,482-4.

Indian Central Cotton Committee:
Representation of cultivators on, *Plymen* 27,463-6
Value of work, *Allan* (197), 29,642, *Korde* 30,694-8

Industries, Department of, *see under* **Administration.**

Irrigation:
AGREEMENTS
Guaranteeing of supply, impossibility of, *Pollard-Lowsley* 29,048-55.
Long term system, compulsion on remainder of occupants if four-fifths agree to come under, *Irwin* (346).
Non-renewal if agreements expire in good year, *Pollard-Lowsley* 28,919-21, 29,041-7.
Non-renewed, percentage, *Pollard-Lowsley* 29,081.
System, necessity for, *Pollard-Lowsley* 29,005.
Canal Deputy Collectors, advantage of revenue officers as, *Pollard-Lowsley* 28,926.

CANALS:
fuller Development anticipated, *Pollard-Lowsley* 28,962-4.
Pariat irrigation scheme, irrigation of sugarcane from, personal experience, *Bhargava* 32,134-8.
Working expenses only just covered, *Pollard-Lowsley* 28,942-3
Chhattisgarh, some complaints made about rates and small supply of water, *Powar* 28,438.
Chief Engineer, works under Revenue member and is also Secretary to Government, *Pollard-Lowsley* 28,940-1.
Colonisation, Chanda scheme, *Pollard-Lowsley* (132), 28,912-17.
Connection with malaria, question of, *Stiles Webb* 32,083.

Irrigation—*contd.*

Consolidation of holdings necessary for obtaining full benefit of, *Pollard-Lowsley* 28,909.
Construction of schemes in Chhattisgarh and especially in Bilaspur district, case for, *Pollard-Lowsley* (132).
Construction of schemes by private persons and charge of rate to cultivators, *Pollard-Lowsley* 28,896-9.
Cost of labour, increase since war, *Pollard-Lowsley* 29,023-4.
Cost of works, interest, maintenance, etc., per acre, irrigated, *Pollard-Lowsley* 28,931-6.
Council Committee on, *Pollard-Lowsley* 29,086-93.
Crops for which required, *Pollard-Lowsley* (131).

DEPARTMENT
Relations with Agricultural Department, *Plymen* 27,578-82, 27,586, 27,827-9; *Pollard-Lowsley* 28,875-6.
Relations of Public Health Department with, *Stiles* 32,038
Staff and organisation, *Pollard-Lowsley* 28,840.
Unpopularity of, *Dubey* (103).
Statement not agreed with, generally, *Pollard-Lowsley* 28,918.
Deterioration of irrigated land in certain cases, *Pollard-Lowsley* 28,887-9.

DEVELOPMENT:
Hindered by fragmentation of holdings, *Dyer* (152).
Improvement of cultivation and consolidation of holdings necessary for, *Pollard-Lowsley* (133), 28,877-9, 28,886, 29,032.
Obstacles to, *Pollard-Lowsley* (133), 29,032, *Bhargava* (428).
Distribution of water, policy, *Pollard-Lowsley* 28,849, 28,852, 29,014-5.
Districts where most needed, *Plymen* (28), *Pollard-Lowsley* (132-3); *Khaparde* (402)
Duty allowed at outlet, *Pollard-Lowsley* 28,999-9004, 29,056-7.
Efficiency, extent of, *Pollard-Lowsley* 28,841-2, 29,006-7.
total Expenditure, and absence of direct return at present, *Pollard-Lowsley* 29,082-5.
Facilities, *Plymen* 27,824-6
Financial position in regard to works for 1925-26, statement showing, *Pollard-Lowsley* (150-1).
High cost of works, *Pollard-Lowsley* (133).
Hydro-electric schemes, none constructed, *Pollard-Lowsley* 29,061-2.
Introduction of new crops under, lack of defined stable policy, *Dubey* (104).
Irrigation Bill. *Pollard-Lowsley* 28,895-6.
Jubbulpore Division, question of scope for, *Irwin* 31,184-8, 31,273-5.
little Lift irrigation, and not considered necessary, *Pollard-Lowsley* 28,992-8.
Mahanadi area, difficulties in connection with, *Pollard-Lowsley* 28,877-9.
Maintenance, high cost of, *Pollard-Lowsley* (133).
Manurial problems of irrigated land, and central research organisation might be useful, *Pollard-Lowsley* 28,889-90, 28,906-8, 29,033-6.

MINOR SCHEMES:
Question of scope for, *Pollard-Lowsley* 28,865-6.
Scope for, but difficulty in connection with, and proposal, *Plymen* 27,588-92, 27,594-5.
Scope for extension in Eastern Circle, but time not ripe for co-operative schemes, *Powar* 28,441-4.
Undertaking of, by cultivators, question of, *Pollard-Lowsley* 28,866-8.
Object of Government works, *Pollard-Lowsley* (131), 28,845.

OFFICERS:
Extent of touch with cultivators, *Pollard-Lowsley* 28,924-8.
Short course in Nagpur College, not considered necessary, *Pollard-Lowsley* 28,929-30.
Openings in irrigation channel, improvement needed, *Dubey* (104).
Particulars *re* Government works, *Pollard-Lowsley* (131-3), 28,841-58.

Irrigation—*contd.*

PERENNIAL CANALS :
in Berar, proposal, *Korde* (319), 30,840-9, 30,879.
in Narsinghpur district, advocated, *Pochory* (517), 32,930-32, 33,031-9.
Perennial and non-perennial canals in wheat and rice tracts, extension advocated, *Bhargava* (428).
Private, extent of, *Pollard-Lowsley* (132)
Productive projects sanctioned by Secretary of State, two will have to be relegated to unproductive list and question of power, *Pollard-Lowsley* 28,980-3.
Programme, *Pollard-Lowsley* 28,923.
Projects submitted to Secretary of State, basis of calculation, *Pollard-Lowsley* 28,973-9, 28,984-8
small Proportion only of rainfall used for, *Pollard-Lowsley* 28,969
Protective and productive schemes, *Pollard-Lowsley* 28,850-8.

RATES :
Contract method of charge, the only satisfactory one, *Pollard-Lowsley* 28,880-2.
Fixing of, *Pollard-Lowsley* 28,900-1
Payment by occupier, not owner of land, *Pollard-Lowsley* 28,937-9.
Policy, *Pollard-Lowsley* 29,025-6.
Remission system, *Pollard-Lowsley* 29,060
Rice, *Dubey* 28,557-9, 28,610-11.
Yearly increase of, detrimental to commercial crops not fully established, *Pande* (532).
Recommendations of Irrigation Commission, extent to which carried out, *Pollard-Lowsley* 28,967-8
Requirements of various crops, investigation being carried out, *Plymen* 27,584-5
as Reserved subject, preferred and reasons, *Pollard-Lowsley* 28,948-58
Rice, *see that title*
Silt in one canal only, *Pollard-Lowsley* 28,902.
Sub-soil water, no survey made, *Pollard-Lowsley* 29,070-2.
Sugarcane, *see that title.*
Surplus water, and question of encouragement of use of, for fodder crops, *Pollard-Lowsley* 29,037-9, 29,052.

TANKS :
Bilaspur District, *Pandeya* (125).
Extension desirable, *Plymen* (28); *Pandeya* 28,786-7
Facilities should be supplied at low rates, *Pande* (532)
Improvement and construction :
Difficulty of obtaining permission from Superior Proprietors or Taluqdars, *Pandeya* (125-6), 28,813, 28,832-5
Restrictions should be removed and constructors of tanks encouraged, *Pandeya* (126).
Manurial substance in water from, question of, *Dwarkanath Singh* 32,699-700.
Particulars *re*, *Plymen* 27,984-92.
Repairs, carried out by Department, *Pollard-Lowsley* 28,902-3.
Sites, etc., *Pollard-Lowsley* 29,016-22
Uselessness of, in Jubbulpore district, *Bhargava* 32,265
in Wheat and rice tracts, extension advocated, *Bhargava* (428).
Tanks and embankments, assistance of cultivators, and pushing of, considered a matter for revenue officers, *Pollard-Lowsley* 28,859-64.
Tanks and ponds, scope for, in Berar, extent, *Korde* (319).
Uncertainty of income, *Pollard-Lowsley* (133), 28,944-6
Utilisation of surplus rainfall, processes demonstrated at Poona Agricultural Exhibition, 1926, should be studies by agricultural officers in Berar, *Sahasrabudhe* (461).
Watercourses, difficulty of obtaining, *Pollard-Lowsley* (133).

Irrigation—*contd.*

WELLS: *Dubey* (103).

Advice to cultivators not considered necessary, *Pollard-Lowsley* 28,872.

Construction, Government assistance, proposal, *Pochory* (517), 33,059.

Experiments made, Sehora district, but impossibility of, on large scale owing to nature of soil, *Pande* 33,197-206, 33,493.

Geological survey desirable, *Korde* (319).

Improvements proposed, *Dubey* (103)

Investigation of subject by specialist, proposal for, *Plymen* (28), 27,592-3, 28,107-9.

Nature of, *Pollard-Lowsley* 29,073-7

Persian wheel, personal experience, *Dubey* 28,462-9, 28,612-5, 28,679, 28,724-5.

Personal experience, *Amanat Ali* 31,638-42, 31,717-22; *Pochory* 32,901-2, 33,061-4, 33,067-8, 33,113-5.

Personal experience, and failure to obtain sufficient water, *Korde* 30,717-23, 30,751-6, 30,765-9, 30,805-8.

Position *re*, *Plymen* 27,959-77.

Provision of, in Berar, need for, and suggestions *re*, *Sahasrabudhe* (460-1), 32,428.

Pucca:

Construction, temporary staff for advice in, could be engaged if necessary, *Pollard-Lowsley* 28,874

Question of a department to deal with, *Pollard-Lowsley* 28,989-91.

Purchase of pump and engine on hire purchase system desired, *Sahasrabudhe* 32,429-30.

Saline efflorescence, proposed resting of soil in areas with, *Plymen* (28)

little Scope for, except in river beds, *Pollard-Lowsley* 28,869-73

Sinking of, not understood by people and work should be undertaken by Agricultural Department, *Dubey* 28,678, 28,717-23

Tube, geological conditions not suitable for, *Plymen* 27,963-73.

Wells and lifts, improvement needed, *Dubey* (107)

Wheat irrigation not anticipated, *Pollard-Lowsley* 28,846-7.

IRWIN, C. J., C.I.E., I.C.S., Commissioner, Jubbulpore Division: (342-347), 31,053-31,400

ADMINISTRATION:

Industries, Advisory Board of, functions, 31,324-5.

Meteorological Department, reliable monsoon reports, would be advantageous, (343)

Railways, need for feeder roads, 31,141-4, 31,148-50.

Roads

Attitude of District Boards, 31,121-2, 31,253-9, 31,328

Construction of, from loans, proposal, 31,068-70, 31,096-100, 31,151-6

Control of, 31,170-3, 31,302-4.

Feeding railways, need for, 31,141-4, 31,148-50.

Improvement of communication, importance of, for cultivators, (343), 31,092-5.

Inadequacy of facilities, Jubbulpore district, and lack of money the cause, (343), 31,252-9

Toll system not in force, 31,155-6

Village:

Bad condition, 31,135.

Difference between wheat growing tract and rice and cotton growing tracts, 31,243-4.

AGRICULTURAL DEPARTMENT

Assistants, relation to Deputy Commissioner, and proposal, 31,270-1.

Services satisfactory, with resources at disposal, (343).

IRWIN, C. J.—*contd.*

AGRICULTURAL INDEBTEDNESS:
Causes of, (343), 31,350-2.
Credit, sources of, (343).
Measures for lightening burden of debt, (344).
Moneylender, desire to remain on books of, (343), 31,072-4.
Removal of.
by Conciliation method, previous effort, 31,343-5.
Possibility of, by steady thrift, 31,346-7.
Repayment, causes preventing, (343).
Right of transfer of holdings, restriction not advocated except in very backward tracts, (344), 31,348-50.
Usurious Loans Act, more free application of, proposed, (344).

AGRICULTURAL INDUSTRIES
Caste objections, (345), 31,088, 31,101-9, 31,236-42, 31,320-7
Cultivators have large amount of spare time, 31,192-5.
Fishing, 31,111.
Fruit growing, difficulty one of capital rather than caste prejudice, 31,110.
Industrial concerns, removal to rural areas, spare time work only on agriculture, suggestion not approved, (346).
Intensive study of rural industries, no industry in Central Provinces known of, which would repay, (346).
Preparation of agricultural produce for consumption, objections to establishment by Government, (345-6).
Rope making for home use mainly, 3112-3, 31,189-91.

AGRICULTURAL LABOUR
Proportion of cultivators and labourers, variation in, 31,211-8.
Seasonal migration, (346).
no Surplus, (346).
Uncultivated land (large areas) better dealt with by settlement with cultivators than by importation of labour to work under local capitalist, (346)

ANIMAL HUSBANDRY
Bad condition and large number of useless cattle, 31,117-8, 31,231.
Castrations, increase in number largely due to introduction of Italian method, 31,316-7.
Cattle breeding industry in Mandla formerly, 3116, 31,223-5.
Feeding of cattle, inadequacy of, owing to apathy, 31,232-5.
Fodder, no scarcity in Jubbulpore Division, 31,166-9.
Grazing
Grass borders in tilled fields, generally negligible, (345)
Overstocking of common pastures, (345).
Remedy prevented by prejudice against elimination of unfit cattle, (345)
Hay from Government forests, supply available and need for utilisation of, (345)
Importation of cattle, 31,116.
Interest of landowners and cultivators in, will only result if profit to be made, (345)
Jubbulpore Division, position as regards cattle, 31,219-25
Lack of interest in, on the whole, 31,114-9

CAPITAL, proposed measures for attracting, (346)

CO-OPERATION:
Credit system, development of, desirable for smaller cultivators, (343).
Development must not be too quick, (346)

CROPS
Damage by wild animals
Extermination the only real means of prevention, (344).
Extermination of wild boar should be possible with proper organisation, (344), 31,077-81, 31,355-6.
Fencing, an uneconomic palliative only, (344).
Food, 31,161-5.

IRWIN, C. J.—*contd.*

CROPS—*contd.*
Seeds
Distribution:
Methods, 31,267-8.
through Seed farms or arrangements with large cultivators to grow pure seed in Jubbulpore Division, and extension of methods desirable, (344).
Improvement, good work being done by department, 31,266
Loans of pure seed, system, 31,268-9.

CULTIVATED LAND, value of, 31,280-2.

CULTIVATION, variation in quality in different districts, and question of reasons, 31,196-210, 31,245-6.

DEMONSTRATION AND PROPAGANDA.
Adoption of expert advice by cultivators, requirements for, (343).
Field demonstrations
Co-operation between officials of Agriculture and Revenue Departments, importance of, (342-3), 31,066, 31,292-5.
Effectiveness of, suggestions for increasing, (342-3).

DISTRICT BOARDS
Cesses:
Amalgamation of, in Central Provinces, 31,121-2, 31,175-7
Extra levied in some districts, 31,123-9.
Expenditure on schools greater than on roads, and roads considered of first importance, 31,091-5, 31,120
Interest in rural matters, extent of, 31,329.
Revenue, proportion given to, 31,174.
Roads, attitude *re*, 31,121-2, 31,253-9, 31,328

EDUCATION
Adult, in rural areas, means for popularisation of, (342).
Agricultural
College
Graduates, special concessions and grants of unassigned cultivable land to, experiment might be tried, 31,289-91.
Practical work, 31,373
Demonstration plots managed by Department, probable value of, (342).
suitable Teachers, importance of, (342), 31,287
Female, advantages to be derived, 31,368
Illiteracy, relapse into, absence of suitable literature probably one cause, 31,337-8
Nature study, valueless, (342).
Primary:
not Compulsory, Jubbulpore division, 31,336
no Fees charged, 31,130-4.
Leakage between first and fourth classes, causes of, 31,330-5
Literacy should be first objective, 31,062-3.
Sweepers and watercarriers not provided, 31,341-2.
Time spent by teachers in trying to obtain attendances, 31,335.
School farms, valueless, (342).
School plots, valueless, (342).

FERTILISERS, use of cowdung as fuel, methods of discouraging, (344), 31,352

FINANCE:
Imperial Bank, system of advances against produce, (343).
Taccavi loans.
Allotments, no refusal known, 31,353-4.
through Co-operative societies not desirable, 31,307.
Elastic system not possible to any extent, 31,305-6.
Extension of system, objections to, (343).
Failure to take up, owing to desire to remain on books of moneylenders, (343), 31,072-4.
Issue, little delay, 31,180.
little Leakage before reaching cultivator, 31,178-9.

IRWIN, C. J.—*contd.*

FORESTS.
Afforestation in village area, expense prohibitive, (346).
Baled hay from, Berar, experiment made but non-success of, (346).
Deterioration from excessive grazing doubted, in Central Provinces, (346), 31,089-90.
Firewood and fodder supplies, (346).
Grazing facilities *v.* preservation of reserve of timber, (346).
Working plans, new establishment for drawing up and revision of, (346).

HOLDINGS, CONSOLIDATION:
Compulsion, some power of coercion desirable, (346).
Co-operation suggested as means of, (344).
Legislation that no contingent interest should interfere with, desirable, (344).
Obstacles in way of, (344).

IMPLEMENTS, measures for inducing adoption of improved, (344).

INTOXICATING LIQUOR AND DRUGS, decreasing consumption, 31,283-5.

IRRIGATION:
long term Agreement system, compulsion on remainder of occupants if four-fifths agree to come under, (346).
Jubbulpore Division, question of scope for, 31,184-8, 31,273-5.

LAND TENURE, cultivating tenure, classes of, 31,158-60.

LANDLORDS, Absentee, 31,157.

MARKETING, difficulties owing to inadequate communications, 31,137-50, 31,210.

PUBLIC HEALTH:
Dispensaries:
Placing under Public Health Department and not under Inspector-General of Civil Hospitals, question of, 31,376-8.
Touring, 31,182.
Private practitioners, subsidising of, in rural areas, 31,183.

RESEARCH as Central subject, probably desirable, (343), 31,260-1.

REVENUE DEPARTMENT:
Commissioners:
Deputy, responsibilities with regard to agriculture and economic development, 31,057-8, 31,369-72.
Responsibilities with regard to agriculture and economic development, 31,055-6.
Inspectors, agricultural training, value doubted, 31,247-51, 31,297.
Lower grade officers, agricultural graduates as, would be approved, 31,299-300.
Organisation under malguzari settlement, 31,060-1.
Rents, system of fixing, 31,379.
Tahsildars, short course in agriculture might be useful for, 31,297-8.

SOILS, *Kans* grass, deterioration of land owing to, Jubbulpore Division, and measures taken, (344), 31,262-5, 31,308-9.

STATISTICS, collection methods in Central Provinces sufficiently accurate, (347).

VETERINARY.
Apathy of District Councils, 31,310-19.
Contagious diseases:
Examination of herds coming in from Native States desirable, (345).
further Legislation not considered possible, (345).
Department, should be independent if Director of Agriculture a technical officer, (344).

IRWIN, C. J.—*contd.*

VETERINARY—*contd.*

Dispensaries.

Control by provincial authority, greater efficiency would result, (345), 31,085-7.

Expansion not adequate, (345).

under Local (District) Boards, apathetic attitude of District Councils, (345), 31,085-7.

Profits from cattle-pounds should be applied to, (345)

Touring, none, but desirable, 31,181-2.

full Use not made of, (345)

Local Veterinary Research Institute, need for, (342).

Outside infection, difficulty of dealing with, 31,320.

Public interest increasing, 31,318.

Services satisfactory, with resources at disposal, (343)

Tours by Veterinary Assistants, value of, (345)

WELFARE OF RURAL POPULATION

Conditions, variation of, in different districts, and question of reason, 31,196-210, 31,245-6.

Economic position of cultivators, (343), 31,278-9, 31,286.

Economic surveys of typical villages, results of, to show that no profit possible in cultivation of land, (347), 31,276-7

Improvement of health conditions, proposed means of encouraging, (346)

Means of improving, (346), 31,226-35, 31,362-8

Physique in rice eating and in wheat eating tract, 31,357-61.

WILD ANIMALS, tigers and panthers, people keen on killing, if possible in spite of reduction of rewards, 31,083-4

Juar, *see under* **Fodder**, *under* **Animal Husbandry** *and under* **Crops.**

Judicial administration, difficulty in cases of auctions of lands, *Brahma* 30,106

KHAPARDE, B. G., LL.B., M.L.C., Amroati: (399-408), 31,869-31,899

Agricultural operations, 31,871-2, 31,875-8, 31,896-7.

ADMINISTRATION.

Indian staff advocated, (399)

Meteorological Department, information to Berar Agriculturists desirable, (400).

Posts and telegraph services, inadequacy of, and need for development in rural areas, (401).

Relations between Government of India and Local Governments, (400).

Roads, inadequate facilities in Berar, (400)

AGRICULTURAL INDEBTEDNESS:

Advances by landowners to tenants, 31,883-7.

Causes, (401).

Credit, sources of, (401).

Damdopat rule, working of, 31,892-3.

Increase in Berar, (401).

proposed Measures for lightening burden of debt, (401)

Moneylenders, system, (401).

Mortgage and sale, objections to restriction of right of, (401).

Mortgages, facilitation of redemption, proposal for, (401).

Repayment, causes preventing, (401).

Usurious Loans Act, application suggested, (401), 31,890-5

AGRICULTURAL INDUSTRIES.

Basket making, (405), (406).

Bee-keeping, practically unknown in Berar, (405).

Fruit growing.

Requirements for success, (405-6).

Water supply difficulty, (405-6).

Intensive study of rural industries with view to manufacture of required tools in India, would be approved, (406), 31,880.

Lac culture, (406).

KHAPARDE, B. G.—*contd.*

AGRICULTURAL INDUSTRIES—*contd.*
Poultry rearing, (405).
Preparation of agricultural produce for consumption, establishment by Government desirable, (406).
Rope making, (405), (406).
Subsidiary industries, proposals, (405).
Time spent by cultivators on holdings and occupation during slack season, (405).

AGRICULTURAL LABOUR.
Berar, training of existing labour preferable to importation, (407).
Hours of work, regulation by sunrise and sunset and need for alteration, (407).
Reluctance of labourer to leave native place, (407).
Shortage, causes and proposed remedies, (407).
Uncultivated land, scheme for settlement on, (407).

ANIMAL HUSBANDRY
Bullocks, working and trotting, proposed development, (404).
Dairying industry, need for improvement and suggestions, (404-5).
Fodder.
Green:
Absence of, in dry seasons, (405).
Preservation of, in pits, suggestion, (405)
Interest of landowners in question, means of encouraging, (405).
Shortage, reasons of, and proposed measures for overcoming, (405).
Grazing
Grass borders in tilled fields, other means of maintaining cattle needed, (405).
Overstocking of common pastures, (405)
Improvement of breeds
Buffalo, importance of, (404).
Milch cows, need for, (404).
Scope for, and suggestions, (404).
Mineral constituents in fodder and feeding stuffs
Absence of, deterioration of cattle owing to, (405).
Salt duty a discouragement to feeding with salt, (405).

CAPITAL, means of attracting, agriculture must be shown to be profitable, (407).

CO-OPERATIVE CREDIT SOCIETIES
Loans must be advanced by, to agriculturists at cheaper rates, (401).
Position of, in Berar, 31,879.
Reasons for cultivators borrowing from moneylenders rather than from, (401).

CROPS.
Cotton, *Roseum*, experience with, and results of, 31,876-8
Damage by loose cattle, (403).
Damage by wild animals, and prevention measures, (403).
Improvement of existing crops, examples of, (403).
Internal measures against infection, (404).
Protection from external infection, pests and diseases, no efficacious methods adopted (403).
Replacement of crops, proposal *re* groundnut, (403).

CULTIVATION:
Plough, judicious use of, advocated, (403).
Rotation, systems of, and suggestions, (403).
Traditional methods, gradual transformation into modern methods needed, (399).

DEMONSTRATION AND PROPAGANDA:
Adoption of expert advice, means of inducing, (400).
Agricultural shows, suggestion for, (400).

KHAPARDE, B. G.—*contd.*

DEMONSTRATION AND PROPAGANDA—*contd.*
Conservatism of Berar peasants and slowness to take in new ideas, (400).
Field demonstrations, effectiveness of, suggestions for increasing, (400).
Improvement of practice of cultivators, actual demonstrations the best means, (400).
Touring lecturers, value of, (400).

EDUCATION
Adult, in rural tracts.
in Berar, position, (400).
Mr Mande's scheme, (400).
Tapswi Babasaheb Prajanjpe's scheme, (400).
Agricultural.
Institutions:
Needed in Berar, (399).
One, in each district, advocated as necessity arises, (399).
Stimulation of demand for, means of, (399).
Students, subsequent careers, (400).
Nature study, as compulsory subject advocated, (399).
School farms, work on, should be optional, (399).
School plots, on small scale, useful, (399).
School started partly for agriculture instruction, control by agriculture Department and financing by fees, donations and Government grants advocated, (400).
Schools, boys overworked in, and course of study should be revised, (399).
Teachers in rural areas, should be drawn from agricultural classes, (399).

FERTILISERS:
Ashes, instruction of cultivator in use of, advocated, (402).
Cattle urine, instruction of cultivator in use of, proposal, (402).
Cowdung.
Dung-pits, instruction of cultivator in use of, proposal, (402).
Use as fuel, difficulty of discouraging owing to absence of equally or more cheap and readily obtainable fuel, (403).
Natural manures, increased use of, preferable to increased use of artificial, (402)
Popularisation of new and improved fertilisers, measures for, (403).

FINANCE, *Taccavi* loans:
Criticism of procedure, and improvement needed, (401).
Supervision of use of loan necessary, (401).

HOLDINGS
Fragmentation problem not serious in Berar, (402)
Legislation dealing with minors, widows, etc., not necessary in Berar, (402).
Small, certain advantages, (402)

IMPLEMENTS:
Adoption of, proposed measure for hastening, ocular proof and demonstration, (404).
Improvements:
to enable Automatic regulation of sowing, proposal, (404).
of India hoe, need for, (404).
of Tifan, needed, (404).
Manufacture in India, and proposed encouragement, (404), 31,888.
New, objection to forcing of, on cultivators, (404).
Tractors, obstacles to use of, (404).

IRRIGATION, need for, in Berar, (402).

LAND REVENUE, reduction of, only means of assisting cultivator, 31,890.

LANDOWNERS, improvement of land, by, discouraged by Government assessment policy, (407-8).

KHAPARDE, B. G.—*contd.*

MIDDLE-CLASS YOUTHS, means of making agriculture attractive to, (400).

RESEARCH

Department

should be Independent of administrative department of Agriculture, (399)

Staff, should be Indians, (399).

into Destruction of cotton crops and tur by worm, advocated, (399).

Financing of, suggestion for, and proposed charging of fees to agriculturists for making use of results, (399), 31,873-4.

Scientific staff of Government of India, increase not advocated, (400).

into Scientific value of indigenous theory and traditional methods, extent of scope for, (399).

SOILS

Drainage for draining off rain water, need for, in Berar, and proposed measures, (402)

Improvement, example of, by erection of bund to prevent sweeping away of surface by rain water, (402).

Land gone out of cultivation, proposed reclamation measures, (402)

VETERINARY.

Contagious diseases, objections to legislation, (404)

Dispensaries, extent to which use made of, and reasons for use not being great, (404)

WELFARE OF RURAL POPULATION:

Economic surveys of typical villages, by Committee on which representatives of the people a majority, proposal for, (408).

Improvement of health conditions.

Difficulties in connection with, (406)

Propaganda, need for, (406).

Typical ideal village, scheme, (406)

Panchayat Committees, proposal, (408)

KORDE, Rao Saheb T. S., M.L.C., Landlord, Murtizapur, Akola: (317-320) 30,679-30,907

Agricultural operations, income, rent, revenue, etc., 30,758-9, 30,770-6, 30,790-9

Lands let on cash rent and *batai* system, 30,757, 30,760-4.

Ryotwari system of owning land, 30,713-4.

Special farm for conducting experiments, particulars *re* work, etc., 30,683-9.

ADMINISTRATION

Co-ordination between provinces on common subjects advocated, (317-8).

Functions of Government of India should be mainly advisory, (318)

Meteorological Department, research on reduction in rainfall and its uncertainty, need for, and for wide and regular publication of results, (318).

Postal Service, inadequacy of, in rural areas, (318), 30,828.

Railways, special facilities and concession rates for transport of raw produce and fodder advocated, (318), 30,884-5

Roads:

Baluta system, return to, desired, 30,818-9.

Fair weather, need for improvement, and Government must undertake, 30,747-50, 30,780-3, 30,811-7.

Importance of, for agriculturists, (318).

Telegraph service, rural areas, importance of development, (318).

AGRICULTURAL DEPARTMENT.

Provincial organisation, proposal, (317)

Service not satisfactory, (318)

AGRICULTURAL INDEBTEDNESS:

Causes, (318).

Credit, sources of, (318).

Government Central Banks on lines of Co-operative Banks, proposal for, (318), 30,874-8.

KORDE, Rao Saheb T. S.—*contd.*

AGRICULTURAL INDEBTEDNESS—*contd.*

Lending of grain in kind, practice of, 30,854-7.
Measures for lightening burden of debt, proposals for, (318), 30,870-5.
Moneylenders:
Doubling of loan in one season, (318), 30,864-9.
Rates of interest charged by, (318).
Repayment, reasons preventing, (318).
Usurious Loans Act, need for, and proposals *re*, (318), 30,870-3.

AGRICULTURAL INDUSTRIES.
more Intensive study of rural industries desirable, (319).
Preparation of agricultural produce for consumption, Government measures for establishment desirable, (319).
Time spent by cultivators on holdings and occupation during slack seasons, (319).

ANIMAL HUSBANDRY
Dairying industry, proposed measures for improvement, (319).
Fodder
Dry:
Grass supply, suggestion for improvement of railway facilities, (319).
Insufficiency of, (319).
Shortage, seasons of, (319).
Transport of, special facilities and concession rates advocated, (318), 30,884-5

CAPITAL, attracting of men with:
Steps necessary, (320).
Sufficiency of land for, on the whole, 30,732-5.

CO-OPERATION.
Agricultural associations, suggestion for, (320).
Central Bank, Akola, crisis owing to want of funds as result of bad years, 30,704-11, 30,777-9, 30,802-4.
Credit movement, desirability of extension, 30,715.

COTTON
Loss on, during present year, 30,886-901.
Roseum, experience of, 30,792-6, 30,902-7.

CULTIVATION, intensive, experiments carried out by witness, 30,683-9.

DEMONSTRATION AND PROPAGANDA, proposals *re*, (317).

EDUCATION
Agricultural
Practical training, importance of, (317).
Teachers.
Confining of, to agricultural class with special training of methods advocated, (317).
Difficulty of obtaining right type and need for improved training, 30,690-1.
Nature study, approved, (317).
Primary.
Compulsory, in rural areas·
Failure of, in Akola, (320).
Raising of age limit to 15 advocated, (320), 30,882
Free, advocated, 30,880-3.
Small proportion of boys passing through fourth class, reason, (320).
Teachers, pay, 30,801.
Public demand for increased facilities, 30,726.

FINANCE
Taccavi Advances:
Criticisms of system, (318).
Procedure should be shorter, (318).
Terms should be according to needs, (318).

KORDE, Rao Saheb T. S.—*contd.*

HOLDINGS, consolidation of:
by Exchange, scheme, (318-9).
Steps being taken by Government, 30,858-63.

IMPLEMENTS, adoption of improved, proposed measures for, (319).

INDIAN CENTRAL COTTON COMMITTEE, value of work, 30,694-8.

IRRIGATION.
Perennial canals in Berar, proposals for, (319), 30,840-9, 30,879.
Tanks and ponds, scope for, in Berar, extent, (319).
Wells
Geological survey desirable, (319).
Personal experience, and failure to obtain sufficient water, 30,717-23, 30,751-6, 30,765-9, 30,805-8.

LANDOWNERS, discouragement of, from carrying out improvements, caused by shortage of funds, (320).

LOCAL BOARD, AKOLA
Cess levied for educational purposes and increase in, 30,737-46, 30,785-9.
Expenditure on wells, 30,851-3.
Improvement of fair weather roads, work *re*, but need for funds, 30,747-50.
Insufficient funds, 30,725, 30,736.
Public demand for better educational facilities and better roads, 30,726-9.

MARKETING.
Cotton, in Berar, facilities not satisfactory and suggestions for improvement (320), 30,820-7.
Grain, in Berar, facilities not satisfactory and suggestions for improvement, (320), 30,823.
Market Committee, majority of sellers on, advocated, 30,827.
PUBLIC HEALTH, drinking water, dearth of, in Berar, 30,846.

RESEARCH
Organisation
by Groups according to soil and climate, proposal, (317), 30,690-3.
separate Institute for each Province advocated, (317).
Scientific staff of Government of India, increase not desirable, (318).

SOILS, research, proposal *re*, (317).

VETERINARY
Ancient methods should be studied and systematised, (317).
Civil Veterinary Department, control by Director of Agriculture advocated, (319).
Dispensaries.
Expansion not adequate, (319).
Full use not made of, and reasons, (319).
under Local (District) Boards, satisfactory working of system in some placed, (319), 30,730-1.
Transfer of control to Provincial Authority, not advocated, (319).
Indigenous methods, use of (319), 30,809-11, 30,830-9.
Service not satisfactory, (318)

WELFARE OF RURAL POPULATION
Economic surveys in typical village by Government, advocated, (320).
Sanitary conditions, inadequate attention paid to, (320).

Lac culture, *see under* **Agricultural Industries.**

Land Mortgage Banks, *see under* **Finance.**

Land Revenue:

Berar Land Revenue Code, proposed amendment, *Brahma* (248), 29,965, 30,102.

Land Revenue—*contd.*

Burden of, comparison with other countries, *Pande* 33,530-3.
Change in date of payment proposed to avoid overflooding of markets, *Dubey* (107), 28,496-8, 28,763-71.

DEPARTMENT:
Agricultural officers should have greater insight into working of, *Allan* 29,730-2.
Commissioners
Deputy.
Relations of Agricultural Assistants to, and proposal, *Irwin* 31,270-1.
Responsibilities with regard to agriculture and economic development, *Irwin* 31,057-8, 31,369-72.
Responsibilities with regard to agriculture and economic development, *Irwin* 31,055-6.
Contact with Forest Department, *Witt* 30,331-2, 30,349.
Lower grade officers, agricultural graduates as, would be approved, *Irwin* 31,299-300.
Officers
of Assistance to Agricultural Department, *Allan* 29,674.
Assistance of Co-operative Department by, suggestions for, *Brahma* (246), *Deshpande* (302), 30,581.
Assistance in demonstration work, *Plymen* 27,904.
Consolidation of holdings by
Impossibility with the ordinary staff, *Dyer* (157).
Proposal, *Bhargava* (428)
Co-operation of, in connection with field demonstrations, importance of, *Irwin* (342-3), 31,066, 31,292-4.
Interchange with Agricultural officers would be advantageous, *Dubey* 28,772-4.
Lectures for, at Nagpur agricultural college, occasionally and question of extension, *Allan* 29,676-83, 29,790-7.
Organisation under malguzari settlement, *Irwin* 31,060-1.
Recruitment to, agricultural qualifications should receive more consideration, *Powar* 28,403-5
Tahsildars, short course in agriculture might be useful for, *Irwin* 31,297-8.
Increase as result of consolidation, suspicion must be avoided, *Dyer* (160)
Inspectors, Agricultural training, value doubted, *Irwin* 31,247-51, 31,297
Policy, improvements discouraged by, *Khaparde* (407-8); *Pande* (538), 33,482-4.
Suspension and remissions, power to Central co-operative banks of recommending, advocated, *Brahma* (247), 29,954-5

Land Tenure:

Change, need for, *Deshpande* (303), 30,551-6
Cultivating tenure, classes of, *Irwin* 31,158-60.
Malguzar system of tenure, evils of, *Allan* (203)
Market value of tenancy land, *Dubey* 28,689-93
Nazarana system, *Pande* 33,537-40, 33,556-8
not Considered to be a cause of indebtedness, *Deshpande* 30,677-8.
Obstacle to growth of co-operative movement, *Trivedi* (170), 29,470.

OCCUPANCY TENURE:
Co-operative societies no assets owing to, *Pande* 33,326-38.
Percentage, *Trivedi* 29,232.
Rights, should be transferable after certain period, *Bhargava* 32,226, 32,316
Rent, system of fixing, by settlement officer, *Bhargava* 32,332
Acquisition of land with rent as fixed at settlement, *Irwin* 31,379.

Landowners:

Absentee, *Irwin* 31,157.

Landowners—*contd.*

Discouragement of, from carrying out improvements, factors, *Plymen* (35), *Allan* (210); *Korde* (320); *Khaparde* (407-8), *Bhargava* (430); *Dwarkanath Singh* (505); *Pande* (538), 33,482-4.
Education of, to sense of responsibilities as landlords, importance of, *Allan* (208), 29,714-6.
Interest in animal husbandry, *see that title*
Large number have no interest in agriculture, *Allan* 29,865-6.

Legislative Council:

Attitude towards agriculture, *Dubey* 28,565-9; *Bhargava* 32,312-6.
Ineffectiveness, *Pande* 33,383-85.
increasing Interest in agriculture since Reforms, *Plymen* 27,858-60.

Leprosy, *see under* **Public Health.**

Local Boards, *see* **District or Local Boards.**

Lucerne, *see under* **Crops.**

Malaria, *see under* **Public Health.**

Marketing:

Commercial Gazette published biweekly or daily in Hindi, dealing with market conditions, crop returns, &c., needed, *Pochory* (518).
Conditions better where communications have been improved, *Powar* 28,347-9
Co-operative, *see* Sale Societies *under* Co-operation

COTTON.

Charges, *Plymen* 28,222-7.
Commission agents, licensing desirable, *Plymen* 27,740-1.
Co-operative societies, particulars *re* working of, *Trivedi* (171), 29,289-330, 29,515-29, 29,573-4, *Brahma* (249), 29,968-84, 30,143-4.
Distance of cultivators from markets, *Dokras* 32,626-8.
Facilities not satisfactory and suggestions for improvement, *Korde* (320), 30,820-7
Grading, need for, *Dwarkanath Singh* (503), 32,757-8.
Improvement, proposals for, *Dwarkanath Singh* (503).
Markets, system, *Plymen* (3).
Satisfactory in theory but not in practice, *Plymen* 27,733-4, 27,743, 28,203-5
Passing of cotton through market and sale elsewhere, *Plymen* 27,736-9.
Personal experience, *Amanat Ali* 31,656-69, 31,754-6.
System and defects, *Sahasrabudhe* (467-8); *Dokras* (484); *Dwarkanath Singh* (503), 32,745-6, 32,753-8, 32,884-7.

Crop (cotton, wheat, rice, oil seeds) movements, (2).
Dalals, licensing system, *Peterson* 32,363-5.
Difficulties owing to inadequate communications, *Irwin* 31,137-50, 31,210.
Exhibition of Bombay rates, opposition by merchants, *Dokras* 32,505.

FACILITIES:

Eastern circle, Raipur, *Powar* (93).
Gadarwara and Kareli markets, not satisfactory, *Pochory* (517-8), 33,160-1.
Unsatisfactory, *Powar* (93); *Dokras* (484).

GRAIN

by Co-operative methods, scheme, *Peterson* (445-6), 32,397-8; *Pande* (537).
Cultivators', system, *Bhargava* 32,194-210.
Empress Mills Co-operative Stores Ltd., system, *Peterson* (445-6), 32,395-6.
Facilities not satisfactory and suggestions for improvement, *Korde* (320), 30,823.
Measurement should be by weight and not by quantity, *Peterson* 32,424.

Marketing—*contd.*

GRAIN—*contd.*

System in Berar, *Sahasrabudhe* (467-8).

System, defects of, and proposals for improvement, *Peterson* (442-5), 32,356-65, 32,376-92, 32,403-24; *Dwarkanath Singh* (503), *Pochory* (517-8), 33,162-3.

Witness' own system, *Bhargava* 32,187-94.

Gram, personal experience, *Amanat Ali* 31,674-5

Improvement, suggestions for, *Pochory* (517); *Pande* (537).

INFORMATION TO CULTIVATORS, &C., AS TO MARKET CONDITIONS, CROP RETURNS, &C.

Advocated, *Pande* 537, *Dokras* (484); *Dwarkanath Singh* (503).

Magazine or weekly papers, suggestion, *Bhargava* (430).

Proposal, *Powar* (93).

Rates of main produce in important railway centres should be published on morning of bazar days, *Pandeya* (127)

through Special Crop Committees, proposed, *Plymen* (33).

Kochias, etc , system of trading and profit made by, *Powar* (93).

Managing Committees in markets, scheme, *Powar* (93).

MARKET COMMITTEE

Majority of sellers on, advocated, *Korde* 30,827.

Representation of cultivators advocated but if impossible, representative of Agricultural Department would be improvement, *Dokras* (484), 32,503-5.

Markets on lines of cotton markets, experiment worth trying, *Plymen* 28,206-7.

Municipal Committees, system, *Sahasrabudhe* (467).

Overflooding of markets and low prices at harvest times and change of dates of payment of land revenue and water-rate suggested to avoid, *Dubey* (107), 28,496-8, 28,763-71.

Protection of villagers in sale of produce, suggestions for, *Pandeya* (127).

RICE, *Plymen* 27,779.

Defects in, and criticisms of activities of Marwaris, *Pandeya* (127)

System, *Plymen* (2-3)

Eastern circle, Raipur, *Powar* (93)

Transport facilities, improvement advocated, *Powar* (93), 28,350

Vegetables, personal experience, *Amanat Ali* 31,678-83

Village Bania or malguzar, system of trading and profit made by, *Powar* (93).

WEIGHTS AND MEASURES.

Cotton, platform scales should be insisted on, *Brahma* (249), 29,968-70

in Grain bazars, difficulty of tampering with, *Peterson* 32,414.

Inspection, *Sahasrabudhe* 32,443-6

Multiplicity of, *Peterson* (442), 32,356-7, 32,373-4, 32,403-9.

Municipal measures, law would be approved, *Peterson* 32,414-7

Municipal stamping of, *Peterson* (442), 32,413, 32,369, 32,407, 32,413.

Standardisation, need for, and suggestion, *Peterson* (442), 32,367-74, 32,391-2; *Sahasrabudhe* (468), 32,437; *Pochory* (518).

WHEAT

Dirt, cause of, *Plymen* 28,005-8

Personal experience, *Amanat Ali* 31,670-3.

Personal experience, and inadequacy of prices, *Pande* 33,321-5.

Meteorological Department, *see under* **Administration.**

Middle class and educated men:

Apprentices, scope for training of, *Amanat Ali* 31,850-1.

proposed Measures for encouraging taking up of agriculture by, *Plymen* (26), 27,523-4, 28,141-3; *Powar* (89), 28,403-5, *Dubey* (101); *Brahma* (241), 30,150-2; *Deshpande* (297); *Khaparde* (400), *Dokras* (479); *Pande* (529), 33,248-9

Unattractiveness of agriculture to, reasons for, *Allan* (200).

Milk, *see under* Dairying industry *under* **Animal Husbandry.**

Moneylenders, *see under* **Agricultural Indebtedness.**

Mortgages, *see under* **Agricultural Indebtedness.**

Muktesar Research Institute, *see under* Research *under* **Veterinary.**

Nature study, *see under* **Education.**

Oilseeds, *see under* **Crops.**

Onions, *see under* **Crops.**

PANDE, K. P., representing the Tahsil Agricultural Association, Sihora, Jubbulpore (529-539), 33,185-33,558.
Agricultural operations, and landownership, 33,187-246, 33,304-25, 33,485-91, 33,494-7.

ADMINISTRATION
Government of India should only deal with activities beneficial to whole of India, (529-30).
Meteorological Department, existence of, little known to agriculturists, (530).
Railways
Concessions to agricultural produce and live stock, suggestion, (530)
Restraint on export of certain agricultural necessities might be necessary in some cases, (530).
Roads in rural areas, importance of, (530)

AGRICULTURAL DEPARTMENT
Budget, cut in, after report of Co-operation Committee, 33,358-67.
Director of Agriculture·
Indian as, advocated, (533).
proposed Position, etc., (533)
Increased funds necessary and question of source of, 33,541-55.
People have little faith in activities of, 33,387-92
Service, improvement since introduction of Reform scheme, (530), 33,368-77.

AGRICULTURAL INDEBTEDNESS
Causes, (530).
Conciliation Boards formerly, 33,411-4.
Credit, sources of, (530)
Damdopat system, 33,286-8.
Debt per head, increasing, (539), 33,348.
Inherited debt, insolvency question, 33,449-54.
Lending of money to villagers by malguzar, and rates of interest, 33,240-1.
Long term credit, facilities should be established, (530).
proposed Measures for lightening burden of debt, (530).
Mortgage and sale, restriction of right of, not advocated as long as better facilities not provided, (530).
Mortgages:
Non-terminable, objected to, (530).
Redemption advocated, (530)
Rate of interest, statutory limitation would be approved if State provided money for agriculturists, 33,242
Repayment, causes preventing, (530).
Usurious Loans Act of little value, existence not known of, in province, (530), 33,283-5

AGRICULTURAL INDUSTRIES
Exhibitions, proposal, (535-6).
Industrial concerns, removal to rural areas, objections to, (535).
Intensive study of rural industries, advocated, (535-6).
Subsidiary industries·
Encouragement advocated, and means for, (535), 33,299.
Experimental work in connection with, should be carried out by Government, (535).
Industries suggested, (535).
Time spent by cultivators on holdings, (535).

PANDE, K. P.—*contd.*

AGRICULTURAL LABOUR:
Areas not at present under cultivation, leasing out of, scheme, (536).
Labour saving machines, results from introduction, (537).
Mobility of (536).
Moving of, from one place to another, objections to system of, (536, 537).
Shortage, causes, (532), (536), 33,295-8
little Surplus of, (536).

ANIMAL HUSBANDRY:
Brahmani bulls, discouragement of, should cease, (534), 33,498-9
Breeding farms, not paying, 33,462.
Conditions in Jubbulpore and Hoshangabad as regards fodder and pasture, 33,464-9.
Cows, prohibition of slaughter of, advocated, (534)
Dairying industry
Ghi, import and adulteration must be stopped, (534).
Milk, adulteration with water must be stopped, (534).

Fodder:
Dry, prohibition of export advocated, (534), 33,519-29.
Green, encouragement of growing of, needed, (535).
Improvement of supply, proposals for, (535).
Interesting of landowners in question of, means of, (535).
Juar, tried but unable to withstand rainfall, 33,235.
Lucerne, not profitable for draught cattle, 33,236
Mineral constituents.
Insufficient and salt tax should be abolished, (535).
Manufacture of local salts should not be discouraged, (535)
Sann hemp, special concessions proposed to encourage growing of, (535).
Shortage, (535), 33,233.
Silage, personal experience, 33,304-16
Wheat straw, export to United Provinces, (534).

Grazing
Conversion of good pastures into fields, (534).
Encroachment on village pastures should be severely dealt with, (535), 33,526.
Exemption of land from land revenue proposed, (535).
Grass borders in tilled fields, reduction, (534).
Over-stocking of common pastures, question of, (534), 33,470-2
Pasture land, proposals for maintenance in villages, (535).

Improvement of breeds:
Importance of, (534).
Services of bulls of good breed in group of 50 villages, proposal, (534).
Slaughter of milch cattle and other agricultural cattle should be prohibited, (537).

CAPITAL, means of encouraging, (538).

CO-OPERATION
Cattle breeding societies, failure in Central Provinces but should be tried again, and suggestion *re*, (537).

Central Bank
Activities should be confined to education, training and propaganda, 33,403.
Deposit of money in, by trustees and District Councils and Municipal Committees should be allowed, (537).
Local bodies should be allowed to keep money in, (537).

Credit societies:
Applications for, and granting of loans, procedure, 33,331-8.
Audit, 33,402.

PANDE, K. P.—*contd.*

Co-operation—*contd.*

Credit societies—*contd.*

more Auditors should be appointed and Central Bank not be asked to bear expense, 33,403.

Difficulties of, owing to tenancy system, 33,326-38, 33,455-61.

more Education of, required, (537).

Debt per head, increasing, (539), 33,348-52.

Encouragement of growth of, proposed measures for, (537), 33,480-1.

Federation of Co-operative Societies, position, 33,393-98.

Housing societies, State aid advocated, (537).

Improvement societies, advance of money to, at low rates and liberal number of instalments advocated, (537).

Insolvency Act, amendment advocated, in order to protect, 33,339-41.

Joint farming societies, should be tried, (537).

Joint improvement, legislation necessary, (538).

Purchase societies, establishment advocated, (537)

Registrar

frequent Changes, 33,342.

Powers recommended by Committee, objection to, 33,366-7, 33,417-9.

Sale societies, establishment advocated, (537)

Societies, reasons for greater success not resulting from, (538).

Societies for fighting diseases, establishment advocated, (537).

Use of machinery, scope for, (537)

Crops

Damage by wild animals, proposed measures for preventing, (532).

increased Fertility of the soils, need for, and methods, (531).

Fodder, difficulty in connection with, (532), 33,415-6.

Food, securing of better prices or increase in yield, need for, (532).

Gram, personal experience, 33,214-5.

Heavy yielding food crops, proposals, (532)

Improved varieties, high yielding nature, continuance doubted owing to soil, (531), 33,294.

Introduction of new crops, Government should advance money free of interest for three years to approved and bona fide cultivators, (532).

Mixture, practice *re*, (533).

Protection:

Internal, cheap methods necessary, and provision to compel owners of neighbouring fields to co-operate advocated, (533).

Methods suggested by Department generally too expensive, (533).

Rust-resisting wheat produced, (533).

Rice

Personal experience, 33,208-9, 33,228-31

Transplantation, known about before propagated by department, 33,371

Rotation, second crop giving as good a return as wheat without affecting fertility of the soil needed for, (533).

Sann hemp, for fodder and manure, special concessions for growing of, under irrigation, proposal, (535); 33,317-8.

Seeds:

Distribution:

through Agricultural Association, (532).

Certified seed farmers, suggestion *re* supply of seed to, by Government, (531).

through Government, Court of Wards and certified farms advocated, (352).

by Malguzars to tenants, and rate of interest, 33,243-7.

Introduction of selected seed, good results, (531).

Wheat:

Cost of cultivation, 33,237-9.

Personal experience, 33,211-3, 33,216-7, 33,237-9, 33,494-7.

Yield, 33,216.

PANDE, K. P.—*contd.*

DEMONSTRATION AND PROPAGANDA:
Demonstration plots, one for group of 50 villages advocated, (529).
Success of, in influencing and improving agriculture, (529).
Success as result of propaganda for selected seed in Sihora tahsil, (529).
Results, suggestion *re* publication of, (529), 33,374

EDUCATION:

Adult:
Night schools, experiment tried by Sihora Central Bank, 33,250-5
Popularisation by opening night schools proposed, (529), 33,250-5.

Agricultural
Administration by District Councils, Co-operative Central Banks and Village Panchayats, with co-ordination by Government, advocated, (529)
Attendances not satisfactory, and reasons, (529)
Charges should be charged on land revenue, (529).
as Compulsory subject in schools in rural areas, advocated, (529).
Courses of study, modifications advocated, (529)
Demonstration farms attached to all Vernacular middle schools and normal schools, advocated, (529).
Facilities, extension, need for, (529).
Scholarships, suggestion for, (529).
Students.
After-careers, (529)
Technical knowledge, no steps taken for improving, (529).
Teachers in rural areas, should be drawn from agricultural classes, (529).

Higher or collegiate.
Agriculture as optional subject, suggestion *re*, (538).
Farm economics should be Studied, (538).
Nature study, present system of little practical use, (529).
Primary schools, practical teaching in agriculture advocated, (538).
Rural, must be in conformity with needs of agriculturists, (538).
Rural primary schools, reasons for small proportion of boys passing through fourth class, (538).

FERTILISERS
Adulteration, proposed preventive measures, (531)
Artificial:
Experiments made but price too high to be paying and irrigation necessary, 33,218-27.
Increased use of, scope for, and methods of encouraging, (531).
Cow dung, use as fuel and proposed measures for preventing, (531).
Manufacture in India, need for, (531).
Materials usable for, export should be prohibited, (531).
Natural manures, scope for increased use of, and methods of encouraging, (531).
Popularisation of new and improved fertilisers, proposed methods of, (531).
Prices, reduction necessary, (331).

FINANCE
Land mortgage banks, State aid advocated, (537)
Long term loans, Government should advance, (530)
Short term loans, Co-operative credit societies should advance, (530).
Taccavi loans:
Delay in granting, (530), 33,262-3.
Granting of, through co-operative societies proposed, and scheme for, 33,264-82, 33,353-4, 33,420-48.
suggested Modifications and improvements, (530).
Obstacles to greater use of, (530), 33,408-10, 33,437

PANDE, K. P.—*contd.*

FORESTS:
Afforestation, no need for further operations, (537).
Cultivation of better fodder crops on systematic lines advocated, (537).
Grazing:
Facilities, increase advocated, (537).
Minimum rate should be charged, 33,502
Provision of facilities by malguzars, 33,504-14
Leasing of areas for cultivation, cattle breeding and dairying purposes, proposal, (537).
Roads, construction advocated, (537).
Seeds of superior kinds of grasses should be supplied, (537).
Soil erosion due to deterioration of forests, not marked in Central Provinces, (537).
full Use not being made of, for agricultural purposes and proposals, (537).

HOLDINGS
Consolidation
Compulsory, legislation necessary for, (531).
Difficulty greater than in Punjab, 33,292-3
Obstacles in way of, (531)
Voluntary, success doubted, (531), (537), 33,289-93
Legislation necessary for extending right of pre-emption, (531)
Tenancy and Land Revenue Acts, changes needed, (531).

IMPLEMENTS
Adoption of improved, proposed measures for hastening, (533)
Distribution and sale by Co-operative Societies and local bodies suggested, (533).
Manufacture
by Government at Central workshop, proposal, (533).
Private firms should be encouraged in, (533).
Obstacles in way of increased use of machinery, (533)
Ploughs and *bakhars* worked by power, supply by Government on contract system, proposal, (532), 33,300-3
Repairing facilities, need for, (533)

IMPROVEMENTS, discouragement of owners of agricultural lands from carrying out, by Government land revenue policy, (538), 33,482-4.

IRRIGATION:
Tanks, facilities should be supplied at low rates, (532).
Water rates, yearly increase of, detrimental to commercial crops not fully established, (532)
Well, experiments made, Sehora district, but impossibility of, on large scale owing to nature of soil, 33,197-206, 33,493.

LAND REVENUE, burden of, comparison with other countries, 33,530-3

LAND SYSTEM:
Nazarana system, 33,537-40, 33,556-8
Occupancy tenure, Co-operative societies no assets owing to, 33,326-38.

LEGISLATIVE COUNCIL, ineffectiveness, 33,383-5.

LOCAL BOARD, interests mainly schools, 33,404-7

MARKETING
Grain, co-operative purchase and sale societies advocated, (537)
Improvement, suggestions for, (537).
Information to cultivators, &c., as to market conditions, crop returns, &c., advocated, (537)
Roads, provision of, in rural areas with light railways, proposal, (537).
Wheat, personal experience, and inadequacy of prices, 33,321-5

MIDDLE CLASS YOUTHS, methods of making agriculture attractive to, (529), 33,248-9.

PANDE, K. P.—*contd.*

RESEARCH, increase of scientific staff of Government of India not advocated, (530).

SOILS, bunding·
Encouragement advocated, (531).
Improvement of soils by, in Jubbulpore *haveli*, (531).

STATISTICS.
Areas under cultivation, collection by village Patwaris, and substitution of another agency would be expensive, (539)
Arrangement and publication should be carried out by Department of Agriculture, (539).
Persons should be deputed to study American system, (539).
Yield of agricultural produce·
Collection by executive officers, objection to, (539).
Taking only one-tenth acre for experiments, method should be changed, (539).

VETERINARY
Civil Veterinary Department, independence of Director of Agriculture not necessary, (533), (534).
Contagious diseases
Legislation not desirable at present, (534).
Obstacles in way of dealing with, (534)
Serum, difficulty experienced in obtaining, (534)
Dispensaries.
Control·
by Extra Assistant Directors of agriculture desirable, (534).
Transfer to Provincial authority not objected to if kept in touch with local needs, (533).
Expansion needed, (533).
Responsibility not realised by Boards owing to dual control with Government, (533).
Touring, little known of, (534)
full Use not made of, and reasons, (533)
Veterinary assistants, transfer to control of local bodies advocated, 33,256-61.
Muktesar Research Institute, relations with proposed provincial institutes, (534)
for Ordinary diseases man of lower subordinate service in every Revenue circle desirable, (533-4).
Pamphlets in vernaculars dealing with diseases and medicines should be published, (534).
Preventive inoculation
no Fee charged in rural areas, (534).
Obstacles in way of popularising, (534)
Propaganda work should be increased, (534).
Provincial Veterinary Research Institute in each province, proposal, (534).
Service, improvement since introduction of Reform scheme, (530).

WELFARE OF RURAL POPULATION:
Economic surveys of typical villages desirable and suggestions *re* carrying out of, (538-9).
Government financial assistance needed, (538).
Government scheme of sanitation in rural areas needed, (536), 33,476-8.
Improvement of health conditions, Government scheme and grants needed, (536).
Indian attitude *re* cleanliness of houses, infectious diseases, &c., (538), 3334.
Physical condition of people in different districts, 33,473-5.

PANDEYA, PURUSHOTTAM PRASAD, Malguzar, Balpur, Bilaspur District: (125-8), 28,777-28,837
Agricultural operations, 28,781-5.

AGRICULTURAL INDEBTEDNESS.
Causes, (125).
Interest, rate of, question of restriction, (125), 28,826-7.
Moneylenders, restrictions on, advocated, (125).
Mortgages.
Property should not be allowed to lapse to moneylenders, (125).
Restriction would be approved, 28,836-7.
Repayment, causes preventing, (125).
Rural insolvency, measures for dealing with, advocated, (125)
Usurious Loans Act, measures for applying, advocated, (125), 28,828.

AGRICULTURAL INDUSTRIES
Bee-keeping, rope-making and lac-culture, advantageous if introduced successfully and managed by local men, (127), 28,806.
Charka, importance of, and suggestion re supply of cotton, (126).
Factories in every tract controlled by Co-operative Banks advocated, (127).
Time spent by cultivators on holdings, (126).
Vegetable growing, encouragement advocated, (125), 28,778-80-28,831.

ANIMAL HUSBANDRY
Cows
Feeding of, 28,817-24
Number decreasing, (126), 28,798-800
Deterioration of cattle, cause, 28,825
Fodder, shortage of, (126), 28,800-5
Ghi, shortage of, (126)
Milk, shortage of, (126)

CO-OPERATION.
Tendency of officials to consider profits rather than welfare of people, (127), 28,807-9.
Value of, if properly run, (127).

EDUCATION.
Agricultural:
should be Compulsory subject in Colleges, High Schools, Middle Schools and Primary Schools, (128).
Inducements to take interest in cultivation, (125), 28,778-80, 28,831.
Instruction of agriculturists on social economy advocated, (125).
Demand for, must be created, 28,796-7.
Night schools in villages, suggestion, (128).
Primary:
Compulsory, apathy of people towards, and means of encouraging interest, (128)
Lapse of boys into illiteracy, (128).
Travelling libraries of light literature advocated to keep up learning of boys, (128).
present Systems, interest in agriculture not encouraged by, (127-8).
Village Schools, practical agricultural work advocated, (128).

FINANCE
Advances of money and seed to cultivators without interest by societies and farms advocated, (125).
Loans by big landlords on moderate or nominal interest should be encouraged, (125).
Taccavi advances:
Approved, (125).
Method of realising, criticism, (125).

PANDEYA, PURUSHOTTAM PRASAD—*contd.*
HOLDINGS.
Consolidation of.
Advantageous, (125).
Opposed by ryot class, favoured by malguzar class, as a rule, (125).
Fragmentation of, objections to, (125)
Legislation to safeguard interest of minors and widows desirable, (125).
IRRIGATION BY TANKS.
Bilaspur District, (125)
Extension desirable, 28,786-7.
Improvement and construction:
Difficulty of obtaining permission from Superior Proprietors or Taluqdars, (125-6), 28,813, 28-832-5
Restrictions should be removed and constructors of tanks encouraged, (126).
MARKETING
Protection of villagers in sale of produce, suggestions for, (127).
Rates of main produce in important railway centres should be published on morning of bazaar days, (127).
Rice market, defects in, and criticism of activities of Marwaris, (127)
Societies should be formed to protect interests of villagers, (127).
RESEARCH
Economy necessary, (125).
Indian youths should be selected for work, (125)
ROADS, District Board without sufficient funds for maintenance, Bilaspur district, 28,795.
VETERINARY
Dispensaries:
Placed too far from villages, (126), 28,790-4
Travelling, inadequate stock of medicine, (126).
Officers, criticism of, (126), 28,814-5.
Research
Economy necessary, (125).
Indian youths should be selected for work, (125)
Surgeons and subordinate officers, strength should be increased in every district, (126).
WELFARE OF RURAL POPULATION, suggestions for improvement of health conditions of villages, (127).
Paper pulp and paper making, *see under* **Agricultural Industries.**
PETERSON, H. H., B.A, Secretary, Y.M C.A., and President, The Empress Mills Co-operative Stores, Ltd, Nagpur (442-446), 32,555-32,424
EMPRESS MILLS CO-OPERATIVE STORES, LTD.
Grain marketing system, (445-6), 32,395-6
Sources of grain, 32,399-401.
MARKETING.
Dalals, licensing system, 32,363-5.
Grain
by Co-operative methods, scheme, (445-6), 32,397-8.
Empress Mills Co-operative Stores, Ltd., system, (445-6) 32,395-6
in *Ganj* or market:
Improvement, suggestions for, and sale by auction proposed, (442-5), 32,376-92, 32,422-4.
System, and defects, (442), (443-5), 32,356-65, 32,382 90, 32,403-21.
Measurement should be by weight and not by quantity, 32,424.
Weights and measures.
in Grain bazaars, difficulty of tampering with, 32,414.
Multiplicity of, (442), 32,356-7, 32,373-4, 32,403-9.
Municipal measures, law would be approved, 32,414-7
Municipal stamping of, (442), 32,369, 32,407, 32,413.
Standardisation of, need for, and suggestion, (442), 32,367-74, 32,391-2.

PLYMEN, F. J., I.A.S., Director of Agriculture (1-35), 27,453-28,314, (88 i-88 ii).
Evidence agreed with, *Powar* 28,320-1.
Training and past appointments, 27,454-5.

ADMINISTRATION:
Advisory Board in Agriculture, 27,558-61, 27,580-1, 27,608-9, 27,858.
All-India legislation on agricultural matters, Government of India should have at its disposal some advisory organisation, (27)
Board of Agriculture, Central, no force behind recommendations, 28,270
Board of Agriculture, Provincial, functions, 27,915-6.
Co-ordination between provinces
Bureau for summarizing of work, to be maintained by Central Government, proposal, (27), 27,547-50, 28,182-4
Financing of certain schemes by Central Government, proposal, (27).
Meteorological information, improved methods would be welcomed, (27), 28,185-7.
Railways.
Examination of rates, desirable, (27), 27,551-61
Provision considered satisfactory, 27,562
Roads in paddy tracts, condition of, 27,776-8

AGRICULTURAL DEPARTMENT
Agricultural Bacteriology section, proposal for expansion, (25).
Agricultural Engineer
Functions, 27,948-58, 27,962
Post at present vacant, 27,457, 27,944
proposed Status and functions, (30)
Budget, and increased sum that could be spent, 28,216-21.
Budget procedure, 27,606-9
Cotton paid more attention to than other crops, 27,861-5.
Demand for services of, by cultivators, increasing, 27,658-9.
Directors of Agriculture
Qualifications required, 28,130-2.
Relations with Civil Veterinary Department, (30)
Distribution of work, (9-10)
Extra Assistant Directors, functions, etc., 27,458
Horticultural section, proposed strengthening of, (32).
Lectures to young officers of various departments on rural economy, 27,725-9.
Organisation, 27,457-60, 27,897-8, 28,115-20.
Relations with Irrigation Department, 27,578-82, 27,586
Results of work, 27,866-70.
special Statistical Officer and Economist should be added to staff, and proposals *re* status, etc., (25), 27,500-3, 27,537
Subordinate services:
Initial pay, 28,176, 28,179.
Organisation, 27,459-60.
Superior Service, opinion *re* training, 27,845-6
Unirrigated areas attended to equally with irrigated, 27,528-30

AGRICULTURAL INDEBTEDNESS
Alienation of land from cultivating classes, 27,757-60, 28,295-7.
Assistance to cultivators through agencies such as Land Mortgage Banks, proposal for, (28), 27,564, 28,106.
Causes of, (6).
Credit:
Effects of system of obtaining, (8).
Sources of, (6-7).
Legislation on lines of Deccan Agriculturists' Relief Act, required, (28)
Types of loan and rates of interest, (7).
Whole time officer, appointment proposed, for dealing with, (28). 27,564-9, 28,106.

PLYMEN, F. J.—*contd.*
AGRICULTURAL INDUSTRIES.
Intensive study of rural industries necessary before steps taken for improvement, (32), 27,704.
Lac culture, (32), 27,702-3, 28,051.
(32).
improved Lay-out and sanitary conditions of villages, scope for, (32).
Poultry farming, (32).
Preparation of produce for consumption, a matter for private enterprise, (32).
Removal of industrial concerns to rural areas, advantages and disadvantages, (32).
Rope-making, prospects, (32).
Rural employment, increase of, improvement of whole agricultural position only measure necessary, (32)
Sericulture, unsatisfactory results, (32)
Vegetable and fruit growing encouragement, proposals for and and steps taken, (32), 27,697-701.
AGRICULTURAL LABOUR
Emigration, (4), 28,073
Migration to cotton tract, (5).
Migration to wheat area, (4-5)
Ryotwari villages, (33)
Seasonal migration, (32)
Shortage
and Causes, (3-4, 4, 5, 33), 28,069-72
Means of overcoming, (33)
Wages, (4)
ANIMAL HUSBANDRY
Cattle breeding societies, Province not yet prepared for, (34), 28,110.
Dairying·
Breeds used, 27,676-8
under Deputy Director in charge of Animal Husbandry and Principal of Agricultural College, 27,671.
Improvement·
Desirable and possible on co-operative lines, (31).
Improvement of milch animal necessary for, (31).
Milk
from Buffalo *v* cow, 27,673-5.
Nagpur system, 27,672-3
Produce, consumption by cultivators and physical effects, 27,697-94
Excessive number of inferior cattle, 27,934.
Fodder
Baled grass·
probable Demand for, (33), 27,719-24.
Reserves, extension of system, suggestion, (31)
Cakes, use of, 27,817-21.
Feeding of cattle during periods of scarcity, 28,192-5.
Green, absence of, in dry seasons, (31).
Growing of crops
Cultivators might be persuaded to take up, if economically sound, 27,683, 28,199-200, 28,202.
Remission or reduction of revenue for, question not considered, 27,695.
Mineral constituents, absence of, research in central institute and provinces desirable (31).
Position *re*, (18).
Problem of, (20).
Shortage, periods of, (31).
Operations, results and prospects, (88i-88ii).
Silage, need for careful investigation, 27,684-6.
Supply of dry fodder:
Deficiency in cotton country sometimes, (31).
Sufficiency in tracts where wheat and rice main crops, (31).
Supply, proposals for increasing, (20).

PLYMEN, F. J.—*contd.*

ANIMAL HUSBANDRY—*contd.*
Forest areas for cattle breeding, proposal, (33), 27,718, 28,201.
Grazing:
Area available, statistics, (31).
Grass borders in tilled fields, cutting down of area, (31), 28,196-8.
Opening of additional forest areas for, not desirable, (31), (33).
Overstocking of common pastures, (31)
Importance of improved live-stock, (18).
Improvement of breeds.
Extension of work, need for, and proposals, (19-20).
Measures to be undertaken by Department, 27,794-800.
Particulars *re* operations, (19), 27,679-82.
Proposals framed for, (30).
Improvement in cultivation dependent on improved cattle, (18)
Landowners' interest, means of increasing, (32).
Statistics, (18).

CAPITAL, means of attracting, (35).

COUNCIL, increasing interest in agriculture since reforms, 27,858-60.

CO-OPERATION:
for Betterment of village life, need for, and suggestions, (34).
Cattle Breeding Societies, little scope for, (34), 28,110.
Control of Co-operative Department by specially trained whole-time officer, proposal, (34), 27,745-8.
Co-operative marketing, development desirable, (34).
Credit and Purchase Societies
Object attained by many, but constant and detailed supervision necessary, (34).
Tendency to attach excessive importance to making of large profits, (34).
Useful and proposal for improvement, 27,749-50.
Joint Farming Societies, extent of scope for, (34)
Legislation advocated where necessary to compel minority to join in, (34).
Societies for co-operative use of agricultural machinery, future for, (34).

CROPS
Cotton:
Increase in acreage during last few years, but tendency to decrease owing to drop in price, 27,629-42.
Introduction of improved varieties, (16).
Roseum, extra profit on, (16).
Seed, pure, difficulty of maintaining, (15).
Damage by wild animals, (29).
Dangerous plants, compulsory destruction of, proposal, (30).
Fodder, experiments with, (29), 27,935-6.
Groundnut, (16), 28,040-41.
Hemp, growing of, but prejudice of some cultivators against, 28,273-7.
Improvement work, consideration of problem from all aspects, 27,937-8.
Introduction of new crops and varieties
Improvement from, but conditions required for, (15).
Particulars *re*, (16).
Requirements for success, (29).
Juar, (16).
Smut in, measures taken against, (14).
Money, change over from food crops to, but tendency again to revert, 27,629-42.
Oilseeds, nature of, and question of acreage under, 27,810-5, 28,040-4.
Onions, 28,054-7.
Potatoes, 28,054-5.

PLYMEN, F. J.—*contd.*
CROPS—*contd.*
Protection:
Imported plants might be allowed in without investigation or fumigation on recommendation of Director of Agriculture, (30), 27,663-4.
Local Departments should have more power and responsibility, *Plymen* (30).
Procedure, not always efficient and takes too long, (30), 27,660-2.
Rice
Introduction of improved varieties, (16-17).
Introduction of improved ploughs, and means of distribution from depots, 27,780-8.
little Manuring of, 27,763-4.
Transplantation of, (14), 27,906
Yield from Department seed and ordinary seed, comparison, 27,882-8.
Seeds
Combined Co-operative and seed producing agencies, 27,649
Distribution, (10-11), (15), 27,871-81, 28,034-9
through Seed farmers and question of extension on commercial basis, 27,643-9.
Pure
Difficulty of maintaining, (15)
Measures taken by recognition of seed growers, 28,283-5.
Seed farms, and percentage of total requirements supplied by, 27,879-81, 27,905.
Seed Unions, results, 28,286-7.
Sesamum, (16).
Sugarcane, *see that title below.*
Water hyacinth, destruction should be made compulsory, (30), 27,665-8.
Wheat:
Decrease in area under, 28,066-8, 28,252-9.
Importation, 28,255-6.
Impracticability of manuring dry wheat, 28,088-90.
Improved varieties, (16-17)
Ploughings, number, 28,247-8.
Varieties grown, 27,475-7, 27,838, 27,999-8004
CULTIVATION.
Double cropping, 27,770-2.
Dry farming, 28,272.
Improvement:
Line sowing instead of broadcasting of seed, (14)
Improvements as result of extended use of inversion plough, (14).
Transplanting of rice instead of broadcasting, (14), 27,906.
Rotations or mixtures:
Improvement, extent of scope for, (30).
Recommendation, 28,013-6.
Tillage systems, improvements, (30).
DEMONSTRATION AND PROPAGANDA:
Agricultural associations, (11), 27,705-13.
Assistance from District Associations, &c., 27,911-4.
Assistance from revenue officers, 27,904.
Attention paid to, equally with research, 27,526-7.
through Big landowners, 28,082-7.
by Cinema films, (27), 27,651-7.
Co-operation with Co-operative Department, 27,650-1.
Demonstration farms:
satisfactory Financial results desirable, 28,077-81.
System, 27,892-6.
Demonstration plots:
Importance of, (27).
Organisation of, proposals, (27), 28,289-91.

PLYMEN, F. J.—*contd.*

DEMONSTRATION AND PROPAGANDA—*contd.*
Work carried and satisfactory results, (14-5), 27,892, 27,896, 27,899, 28,080-1, 28,144-8.
Demonstrators, class of, training, &c., 27,531-6, 27,889, 28,093.
Expenditure on propaganda and research, comparison, 28,298-300.
Field demonstrations, proposals for increasing effectiveness, (2).
Improvement needed and proposals, 27,525, 27,768, 28,094-8.
Methods adopted, 27,890-6, 27,899-903.
Records of experiences, extent to which kept, and importance of, 27,537-45.
Results of propaganda, 28,092.
Work, (10).
Work easier in cotton tracts and opening of demonstration plots there unnecessary, 27,907.

EDUCATION:
Adult, means of popularising, (26).
Agricultural
on Akola farm, failure, (23).
Attendances, (26).
College:
Affiliation to University, expectations from, (21-2).
Course too scientific and should be more economic, 27,517, 28,177-8.
Courses, etc., (21-22), 27,939-43, 27,951-2, 28,174-6.
Research workers, too great proportion of time spent on teaching, 27,504-6.
Selection of candidates for admission, (26).
Students:
After careers, (21), 27,507-14, 27,854-7, 25,100-1.
Employment on estates or cattle farms, encouragement desirable, 27,509-10.
Courses of study, modifications will be carried out when called for, (26).
Facilities, (21-3), (25-6).
Farm school under construction, (26).
Farmers' attitude towards, (26).
on Government farms, (23).
Inducements, prospect of obtaining Government service the main inducement, (26)
in Middle schools, (35).
Post Graduate
Facilities, provision not advocated until prospect of posts, 28,264-5
Students going abroad for, 28,262-3.
Middle School, Powerkhera, record of students being kept, 27,520-2.
in Middle schools, (35).
in Rural Vernacular schools, (23).
Seasonal classes, (23).
Students:
Source of, (26).
Subsequent training, (26).
Teachers, from agricultural classes, only, rule not advocated, (26).
University, (21), (25-6).
Vocational schools, experiments and results, (22-3), 28,301-14.
Yeotmal farm students under bond to take up employment as teachers, (26).
growing Demand for, among cultivators for sons, 28,312.
Faculty of Agriculture, 28,062-4.
little Influence on agricultural efficiency or desire to take up agriculture, (34-5), 27,751-4.
Low caste attendance at schools, 28,228-31.
Nagpur University, Chair in Rural Economics, desirability, 27,515-7.
Nature study, opinion *re*, (26).

PLYMEN, F. J.—*contd.*
EDUCATION—*contd.*
Rural:
Compulsory, would be more acceptable if subsidiary industry taught, (35).
Elasticity necessary, (35).
general Policy, (22)
Small proportion of boys in primary schools passing through fourth class, explanation, (35).
School farms
Necessary in schools where agriculture taught as a vocation, (26)
Valueless for young boys, (26).
School plots, opinion *re*, (26).
FERTILISERS:
Ammonium sulphate, increased use of, for cotton at Hoshangabad, (29).
Artificial:
Increased use of, scope for, (29).
Investigations, (29)
Price, importance of reduction, (29).
Bonemeal
Export, 28,030-1.
not Used to any large extent, 28,030-1
Bones, grinding up of, and use in Province desired instead of export, 27,617-22
Cowdung, use as fuel;
Attempts to encourage use of firewood in place of, and failure, (9).
Fuel depots, establishment of, in Chhattisgarh Division, 27,624-8.
Means of discouraging, (29)
Question very serious, 27,623.
Use of cotton stalks instead, extent to which possible, 28,032-3.
Experiments being carried out, 27,765.
Fraudulent adulteration, prevention of, measures, (29)
Increased use of, economic question in connection with, 27,610, 27,614.
Karanja cake, places where use of, increased, (29).
Natural:
Compost-making experiments, 27,613, 27,615-6.
Increased use of, scope for, (29).
no Natural deposits usable as, 28,052-3.
Nitrogen
Fixation of, from the air, 27,993-8
the Limiting factor, 27,611
Oil-cake, importance of, 27,617
Oil seeds, retention desired, 27,816.
Popularisation of new fertilizers, methods, (29).
Sann hemp, use not developing as quickly as desirable, 277.
Tilli cake, districts where use of, increased, (29)
FAMINE, none for many years and reason, 27,978-81.
FINANCE
Banking influence, (6).
Barhi system of loans, 27,570-4.
Provision of much cheaper credit than obtainable under present system not advocated, (28)
Taccavi loans·
Issue of, in kind, extension of system desirable, (28).
Issue, appointment of special officer, proposal, (28), 28,103.
Remission of interest on instalments when land revenue remitted, 27,576-7.
Remission, loss on account of, not believed to be heavy, 28,105.
Speed the important thing, 28,104.
System and statistics, (8).
Unpopularity, reasons for, (8).
FOOD GRAINS, difference in prices in rice or wheat tract and cotton tract, 28,292-4.

PLYMEN, F. J.—*contd.*

FORESTS:
Afforestation schemes near villages, opening for, where fodder and fuel supplies scarce and where waste land exists, (33).
Baled grass, experiments in supply of, for staff feeding, (8).
Cattle-breeding areas, proposal, (33), 27,718, 28,201.
Department:
Relations with Agricultural Department, 27,718
Young officers, attachment of, to Agricultural Department, scheme not considered necessary, but not objected to, 27,726-8.
Erosion of soil by monsoon rains, and preventive steps advocated, (33)
Firewood, encouragement of use of, as fuel in place of cowdung, attempts and failure, (9)
Fodder and thatching grass, supply, (8-9)
Fuel and other produce, supply to cultivators, (9).
Planting of shrubs or trees by cultivators, doubted, 27,730-1.

FRUIT GROWING:
Prospects, 28,045-50
Position *re*, 27,801-5

HOLDINGS
Consolidation
Importance of, 27,715-7
Labour problem would be affected by, (4).
Legislation necessary, 28,214-5.
Obstacles in way of, (2).
Position *re*, (2), 28,208-13
Special legislation and special staff needed, (2)
Fragmentation, serious problem only in Chattisgarh Division, (1-2).
Small size of, drawback of, 27,523-4.

IMPLEMENTS
Agency for supply of, (17)
Improved
Extension of use of, statistics, (17).
Methods for increasing adoption of, (30).
Improvement, work carried out, (13).
Manufacture by Indian firms (17)
Timber for, no difficulty in obtaining, by ryots, 27,789-93.
Types sold, (17-18).

IMPROVEMENTS, discouragement of landowners from carrying out, due to general lack of interest, (35)

INDIAN CENTRAL COTTON COMMITTEE, representation of cultivators on, 27,463-6.

IRRIGATION:
Department, relations with Agricultural Department, 27,578-82, 27,586, 27,827-9.
Extension necessary in northern part of province, (28).
Facilities, 27,824-6.
Minor schemes, scope for, but difficulty in connection with, and proposal, 27,588-92, 27,594-5.
Requirements of various crops, investigation being carried out, 27,584-5.

Tanks:
Extension desirable, (28).
Particulars *re*, 27,984-92.

Wells:
Investigation of subject by specialist, proposal for, (28), 27,592-3, 28,107-9.
Position *re*, 27,959-77.
Saline efflorescence, proposed resting of soil in areas with, (28).
Tube, geological conditions not suitable for, 27,963-73.

PLYMEN, F. J.—*contd.*

MARKETING:
Co-operative, development desirable, (34).
Cotton:
Charges, 28,222-7.
Commission agents, licensing desirable, 27,740-1.
Markets, system, (3).
Markets, system satisfactory in theory but not in practice, 27,733-4, 27,743, 28,203-5
Passing of cotton through market and sale elsewhere, 27,736-9.
Crop (cotton, wheat, rice, seeds) movements, (2).
Giving of information *re* market conditions through Special Crop Committees proposed, (33).
Markets on lines of cotton markets, experiment worth trying, 28,206-7.
Rice, 27,779.
System, (2-3).
Wheat, exported, cause of dirt, 28,005-8.

MIDDLE CLASS YOUTHS, means of attracting to agriculture, (26), 27,523-4, 28,141-3, 28,403-5.

PUBLIC HEALTH:
Drinking water
Improvement, must be financed along with general improvement of rural areas, 27,756.
careful Investigation necessary and appointment of special officer advocated, 27,755.
Well boring, work transferred to Public Works Department, 27,955-8.

RESEARCH:
Agricultural Bacteriology, proposal for increased staff, (25).
Animal nutrition, central or provincial organisation, question, 28,167-8.
Botanical, work, (11-12).
Central fund or funds provided by cess on exports of wheat, rice, oil seeds and cakes, etc., scheme for, (24-5), 27,461-2, 27,467-9, 27,830-3, 27,847-52, 28,133-8.
Chemist, familiarity with work at Pusa and in other provinces, 27,486-7.
Co-operation between officers of scientific sections of various provinces, 27,481-2.
Distribution between central and provincial institutions, question of, 27,929-33, 28,154-73, 28,135-8.
Horticulturist, duties now carried out by other officers, criticism, (25).
Major crops such as oilseeds, small millets and fibres, increased attention to, desirable, (25).
Nature of problems being dealt with, (12), (13), 27,483-5, 28,271-81.
Pusa Institute:
little Benefit to Provincial Departments, 27,471-4, 27,480.
Developed before organisation of provincial departments, 27,470, 27,834-5.
Development for central research work and post graduate training would be approved, 28,267-9.
Post-graduate training, sending of men to England probably more useful, and proposal *re*, 27,489-99.
Recruitment to, opinion *re*, 28,121-8, 28,153
Training at, question of, 27,836-7, 27,839-44, 27,845.
Scientific staff:
Particulars *re*, and need for increase, 27,921-8.
Separation from teaching staff desirable, 27,922, 27,927.
Soil physics, increased attention to, desirable, (25).
Staff and distribution of work, (9-10).
Visits of officers to other parts of India useful, 27,488.

SCARCITY, relief works during, 27,981-3.

PLYMEN, F. J.—*contd.*

SOILS:
Bunding system, (28).
Chemicals taken away by different crops, work *re*, 28,022-5.
Deterioration owing to growth of *kans* grass, and measures adopted for dealing with, (28), 27,599-605, 28,026-9, 28,232-3.
Excess water, co-operation amongst cultivators for removal of, desirable, (28).
Erosion, extent of problem, 28,249-51.
Improvement on some Government farms, (28).
Resting of, from irrigation, in areas where wells unsuitable for irrigation, (28).
Retention of moisture, experiments carried out for, 28,271.
no organised Survey carried out, but certain work being done, 27,596-8.
Uncultivated land, and question of encouraging settlement on, 27,806-9, 28,074-6.
Waterlogged, drainage proposals, (28).

STATISTICS:
Areas under cultivation and crops, sufficiently accurate, in general, (35).
Crop forecasts:
Extent of responsibility of Agricultural Department, 28,151-2.
System, 28,234-46, 28,260-1.
Imports and exports of foods, question of availability, 28,058-61.
Live stock and implements, reliability of, (35).
Yield, crop cutting experiments needed and increased staff required for, (35).

SUGAR INDUSTRY, *Gur* making only, 28,009-10, 28,017 .

SUGARCANE
Acreage, decrease and reason, 27,822-3.
Coimbatore:
Cultivation of, 27,773-5.
Value of, 27,478-9
Coimbatore Station, advantage derived from, 27,480.
Cultivation, improvements in, as result of demonstration, (14-15).
new Furnace, benefits derived from introduction of, (15).
Fertilisers, value of Karanja cake, 28,188-90.
Introduction of new varieties, (16).
Rotation, 28,011-6.
Watering required, 28,019-21.

VETERINARY:
Civil Veterinary Department:
Close co-operation with Director of Agriculture desirable, (30)
Control by Director of Agriculture not desirable, (30).
Staff, increase needed, (30).
Provincial Research Institute, need for, (25), (30), 27,853, 28,139-40.

WELFARE OF RURAL POPULATION:
Concentration on education, agriculture, rural sanitation and health advocated, 27,761-2.
Economic surveys in typical villages
Desirable and suggestion *re* method of carrying out, (35), 28,111-4.
Work carried out, (35).
Improvement of hygienic conditions necessary, (35).

POCHORY, Kaluram, representing the Agricultural Association, Gadarwara: (516-518), 32,896-33,184.
Estate of, and agricultural operations, particulars *re*, 32,897-922, 32,933-32,942, 32,947-66, 32,988-33,181.

AGRICULTURAL INDEBTEDNESS:
Causes of, (517), 33,166-9.
Credit, sources of, (517).

POCHORY, Kaluram—*contd.*

AGRICULTURAL INDEBTEDNESS—*contd.*
Moneylenders should be bound to give loans at not more than settled rate of interest, (517), 32,926-9.
Moneylending by malguzar, rate of interest, etc , 32,920-22.
Mortgages of absolute occupancy land, proposed restriction, (517).
Repayment, causes preventing, (517).

AGRICULTURAL LABOUR:
Binding of labour to villages, proposal, (517), 32,967-73, 33,010-20, 33,182-4.
Shortage:
Causes, (517), 32,964-6.
proposed Measures to remedy, (517)
Wages, rates, 32,969-73, 33,080-3, 33,147-8

ANIMAL HUSBANDRY:
Breeding farm should be started by Agricultural Department ,in every district and bulls be supplied to cultivators on premium system, (517).
Cows, feeding of, 32,949-55.
Fodder
Juar stalks, use of, 33,109-11.
Shortage, 32,934-5.
Silage, personal experience, 32,936-42, 33,021-7.
Grazing·
see also under Forests *below.*
no Land reserved for pasture by cultivators, 33,050-3, 33,089-94.

CROPS
Cotton:
Personal experience, 33,116-21, 33,133-5.
Yield, 33,042-3.
Cotton stalks not used as fuel, 33,005-9.
Damage by jackals, 33,044-8.
Groundnut, discontinued owing to trouble with jackals, 33,044-8.
Introduction of, by Malguzar among tenants, 32,913.
Seeds, distribution by Malguzar to tenants, and rate of interest, 32,914-6.
Wheat:
Personal experience, 33,136-42.
Yield, 33,040-1

DEMONSTRATION AND PROPAGANDA
Assistance of intelligent cultivators with improved implements, suggestion, (516).
Demonstration of improved implements, proposal for, (516).

EDUCATION:
Agricultural·
Extension of facilities, need for, in Narsinghpur district, (516).
Incentives inducing lads to study, (516).
Institutions, insufficiency, (516).
Teachers·
Insufficiency, (516).
in Rural areas should be drawn from agricultural classes, (516).
Nature study, advocated, (516)
School farms, advocated, (516).
School plots, advocated, (516).

FERTILISERS.
Cowdung, use as fuel, opening of forests free to agriculturists for wood advocated, (517), 32,982-7, 33,002-3.
Manufacture of some, in India by aid of Government advocated, (517).
Purchase by Agricultural Department and sale at cost price, proposal, (517).

POCHORY, Kaluram—*contd.*

FINANCE.
Long-term advances by Government at low rate advocated, (516).
Taccavi loans.
Applications usually granted if request reasonable, 32,924-5.
in Kind, proposal, 33,069, (516).
Use of loan, proposed supervision, (516), 32,923, 33,070-3.

FORESTS:
Grazing:
Free, for agricultural cattle proposed, 32,977-81.
Tax on buffaloes should be same as on cow or bullock, (517), 32,943-6.
Stray cattle in, from hilly *malguzari* villages, penalty and reduction, advocated, (517), 32,956-63.

GADARWARA AGRICULTURAL ASSOCIATION, membership, objects, etc., 33,097 33,108, 33,125-32.

IMPLEMENTS:
Adoption of improved implements, proposed measures for hastening, (517).
Manufacture in India, Government should start workshop for, (517).
Motor tractors, useful in some districts, 33,154.
Taccavi loans for, for long terms at low rates desired, 33,056-8.

IRRIGATION.
Perennial Canals in Narsinghpur district, advocated, (517), 32,930-32, 33,031-9.
Wells:
Construction, Government assistance, proposal, (517), 33,059.
Personal experience, 32,901-2, 33,061-4, 33,067-8, 33,113-5.

MARKETING:
Commercial Gazette published bi-weekly or daily in Hindi, dealing with market conditions, crop returns, &c., needed (518).
Facilities in Gadarwara and Kareli markets, not satisfactory, (517-8), 33,160-1.
Grain, defects, and suggestions for improvement, (517-8), 33,162-8.
Improvement, communication from interior to central markets, should be improved, (517).
Measures, standardisation necessary, (518).

STANDARD OF LIVING, increase, 33,166-9.

POLLARD-LOWSLEY, Colonel H. de L., C.M.G., C.I.E., D.S.O., Chief Engineer, Irrigation. (131-3), 28,838-29,093, (150-1).

FERTILISERS.
Manure, shortage in certain areas, (133).
Sann hemp, obstacles in way of growing, 28,906, 29,034.

HOLDINGS, consolidation, legislation necessary, 28,909-10.

IRRIGATION:
Agreements.
Guaranteeing of supply, impossibility of, 29,048-55.
Non-renewal if agreements expire in good year, 28,919-21, 29,041-7.
Non-renewed, percentage, 29,081.
System, necessity for, 29,005
Canal Deputy Collectors, advantage of revenue officers as, 28,926.
Canals:
fuller Development anticipated, 28,962-4.
Working expenses only just covered, 28,942-3.
Chief Engineer, working under Revenue Member, and is also Secretary to Government, 28,940-1.
Colonisation, Chanda scheme, (132), 28,912-17.
Consolidation of holdings necessary for obtaining full benefit of, 28,909.

POLLARD-LOWSLEY, Colonel H. de L.—*contd.*
IRRIGATION—*contd.*
Construction schemes, in Chhattisgarh and especially in Bilaspur district, case for, (132).
Construction of schemes by private persons and charge of rate to cultivators, 28,896-9.
Cost of labour, increase since war, 29,023-4.
Cost of works, interest, maintenance, &c., per acre, irrigated, 28,931-6.
Council Committee on, 29,086-93.
Crops for which required, (131).
Department:
Relations with Agricultural Department, 28,875-6
Staff and organisation, 28,840.
Deterioration of irrigated land in certain cases, 28,887-9.
Development, improvement of cultivation and consolidation of holdings necessary for, (133), 28,877-9, 28,886.
Distribution of water, policy, 28,849, 28,852, 29,014-5.
Districts needing new works, (132-3).
Duty allowed at outlet, 28,999-9004, 29,056-7.
Efficiency, extent of, 28,841-2, 29,006-7.
total Expenditure, and absence of direct return at present, 29,082-5.
Financial position in regard to works for 1925-26, statement showing, (150-1).
High cost of works, (133).
Hydro-electric schemes, none constructed, 29,061-2.
Irrigation Bill, 28,895-6
little Lift irrigation, and not considered necessary, 28,992-8.
Mahanadi area, difficulties in connection with, 28,877-9.
Maintenance, high cost of, (133).
Manurial problems of irrigated land, and central research organisation might be useful, 28,889-90, 28,906-8, 29,033-6.
Minor schemes, undertaking of, by cultivators, question of, 28,866-8.
Minor works, question of scope for, 28,865-6.
Object of Government works, (131), 28,845
Obstacles to extension of, (133), 29,032.
Officers:
Extent of touch with cultivators, 28,924-8.
Short course in Nagpur College, not considered necessary, 28,929-30.
Particulars *re*, (131-3), 28,841-58
Private, extent of, (132)
Productive projects sanctioned by Secretary of State, two will have to be relegated to unproductive list and question of power, 28,980-3.
Programme, 28,923.
Projects submitted to Secretary of State, basis of calculation, 28,973-9, 28,984-8.
small Proportion only of rainfall used for, 28,969.
Protective and productive schemes, 28,850-8.
Rates:
Contract method the only satisfactory one, 28,880-2.
Fixing of, 28,900-1
Payment by occupier, not owner of land, 28,937-9.
Policy, 29,025-6.
Remission system, 29,060.
Recommendations of Irrigation Commission, extent to which carried out, 28,967-8.
as Reserved subject, not transferred, preferred and reason, 28,948-58.
Rice
Agreement system, 28,891-5, 28,959-61.
Delta required, 29,011-3.
Statement of extent to which rice grown and irrigated in more important rice growing districts, (131-2).
Silt in one canal only, 28,902.

POLLARD-LOWSLEY, Colonel H. de L.—*contd.*

IRRIGATION—*contd.*
Sub-soil water, no Survey made, 29,070-2.
Sugarcane, works not suitable for, 28,946.
Surplus water and question of encouragement of use of, for fodder crops, 29,037-9, 29,052.
Tanks:
Repairs, carried out by Department, 28,902-3.
Sites, etc., 29,016-22.
Tanks and embankments, assistance of cultivators, and pushing of, considered a matter for revenue officers, 28,859-64.
Uncertainty of income, (133), 28,944-6.
Unpopularity of, statement not agreed with, generally, 28,918.
Watercourses, difficulty of obtaining, (133).
Wells:
Advice to cultivators not considered necessary, 28,872.
Nature of, 29,073-7.
Pucca
Construction, temporary staff for advice in, could be engaged if necessary, 28,874.
Question of a department to deal with, 28,989-91.
little Scope for, except in river beds, 28,869-73
Wheat irrigation not anticipated, 28,846-7.
Juar, diversion to rice hoped for in time, 29,009-10.

Postal facilities, *see under* **Administration.**

Potatoes, *see under* **Crops.**

Poultry keeping, *see under* **Agricultural Industries.**

POWAR, Rai Bahadur TUNDI LAL, B.A. Deputy Director of Agriculture. Eastern Circle, Raipur. (89-93), 28,315-444.
Training and past appointments, 28,317-9.

AGRICULTURAL INDEBTEDNESS
Causes of, (90).
Credit
Restriction not desirable at present, (91).
Sources of, (90).
Increasing, 28,431.
Measures for lightening burden of debt, (90-1).
Mortgages·
Limitation of right of, not desirable at present, (91).
Non-terminable, prohibition advocated, (91).
Passing of land from cultivators, 28,343-5.
Repayment, reasons preventing, (91).

AGRICULTURAL INDUSTRIES
Government establishment not advocated, (92).
more Intensive study advocated, (92).
Scope for, and irrigation facilities and financial help would be required, 28,421-4.
Subsidiary
Encouragement of, a means of checking flow of labour to industrial centres, (93)
Establishment of, by encouraging industrial concerns to move to rural areas, not desirable, (92).
Obstacles in way of expansion, (92).
Requirements for successful taking up of, (92)
Time spent by cultivators on holdings, and amount of idle time, (92), 28,362-74.

AGRICULTURAL LABOUR·
Employment, extent of, and amount of idle time, 28,360, 28,365-6, 28,369-74.
Migration, (93).
Returned after migrating, change in standard of living, 28,425-8.

POWAR, Rai Bahadur TUNDI LAL, B.A.—*contd.*

AGRICULTURAL LABOUR—*contd.*
Shortage, Eastern Circle, and means of remedying, (93), 28,346, 28,359.
Taking up of other work at times, 28,360-2, 28,638.

ANIMAL HUSBANDRY:
Condition of, Chhattisgarh Division, 28,409-13.
Fodder reserves, system, 28,439-40.

CO-OPERATION:
Credit societies, proposals *re* working of, (90).
Purchase and supply of seed by, proposal, (92).

CROPS
Change to more valuable crops, Eastern Circle, 28,382-7.
Damage to, by wild pigs, and measures taken, (92).
Eastern Circle, nature of, 28,351-6.
Improvement by selection and breeding, scope for, (91).
Introduction of new crops and improved varieties.
Eastern Circle, 28,430.
Requirements for success, (91).
Paddy, system of cultivation, (92).
Seeds, distribution of
by Co-operative Societies, suggestion, (92).
Measures for, (91-2).
Species found most profitable, (92).
Wheat, Pusa 100, introduction of, Chhattisgarh Division, and advantages of, 28,414 20.

CULTIVATION, raising of standard of, a means of checking flow of labour to industrial centres, (93).

DEMONSTRATION AND PROPAGANDA
by Agricultural Associations and value of, (89).
Cinema, value of, (90).
Demonstration Plots
Increase in number desirable, 28,436
System and success, (89), 28,434-5
increased Expenditure on, needed, but not at expense of research, 28,322-5.
Experiments by cultivators not encouraged, 28,327.
Inducing of cultivators to adopt expert advice more freely, means, (90).
Measures adopted and results of, Eastern Circle, Raipur, (89-90)
Seed and Demonstration Farms, success of, (89).
Single purpose demonstration, effective in certain cases, 28,328-9.
Success, examples of, (90).
Well organised intensive propaganda, necessary, (90).

EDUCATION.
Adult, intensive propaganda and cinema, proposal, (89).
Agricultural
Administration by Education Department, but supervising staff should be recruited partly from graduates of Agricultural College, (89).
Agricultural schools, little demand for, (89).
Improvement of technical knowledge of students, movement for, (89).
Inducements, prospect of Government Service, (89).
Students:
After careers, (89).
Source of, (89)
Supply of teachers and institutions, inadequacy of, (89).
Teachers in Village schools, must be drawn from agricultural classes, (89).
in Vernacular Middle Schools, Baloda Bazar and Champa, possible opening of demonstration plots for instruction, (89).
in Village Schools, proposal for, (89), 28,388-402.

POWAR, Rai Bahadur TUNDI LAL, B.A.—*contd.*

EDUCATION—*contd.*
slight growing Demand for, 28,341-2.
Nature Study, plots attached to normal schools, (89).
Primary Schools, fourth class, decrease in number of boys in, compared with lower classes, 28,395-400.

FERTILISERS ·
Artificial, useful for certain crops, (91).
Bone meal, satisfactory for paddy, but caste prejudice a difficulty, (91).
Cattle dung
careful Preservation necessary, (91)
Use as fuel and proposed measures for discouragement, (91).
Cattle urine, non-use of, (91).
Effect of manuring with phosphates, nitrates and sulphate of ammonia under investigation, (92).
Natural, scope for increased use of, (91)
Oil cake, use of, (91).
Popularisation, methods, (91).
Sann-hemp, value of, (91).

FINANCE, *Taccavi* advances ·
in Kind advocated, (90).
should be Supplementary to loans by credit societies, (90).

HOLDINGS ·
Consolidation
through Co-operation, as in Punjab, not considered suitable to conditions, 28,334-40
Mr Dyer's proposal approved, 28,333.
Exchange, legal difficulties, 28,376-81
Measures taken for, (91).
Fragmentation of owing to effects of practice of Lakhabata (91)

IMPLEMENTS ·
Improved methods of hastening adoption, (92).·
Improvement, scope for, (92).
Light iron ploughs
Introduction into Chhattisgarh Division, 28,406-8.
Manufactured in India, material inferior, 28,408.

IRRIGATION :
Chhattisgarh, some complaint made about rates and small supply of water, 28,438.
Minor schemes, scope for extension in Eastern Circle, but time not ripe for co-operative schemes, 28,441-4.

MARKETING :
Conditions better where communications have been improved, (3), 28,347-9.
Co-operative purchase and sale societies, proposed organisation of, (93).
Facilities ·
Eastern circle, Raipur, (93).
Unsatisfactory, (93).
Issue of information *re* market conditions, crop returns, &c., to cultivators, merchants and traders, proposal, (93).
Kochias, etc., system of trading and profit made by, (93).
Managing Committees in markets, scheme, (93).
System of, Eastern circle, Raipur, (93).
Transport facilities, improvement advocated, (93), 28,350.
Village Bania or malguzar, system of trading and profit made by, (93).

MIDDLE CLASS YOUTHS, means of making agriculture attractive to, (89).

REVENUE DEPARTMENT, recruitment to, agricultural qualifications should receive more consideration, 28,403-5.

STANDARD OF LIVING, improving slowly, 28,432.

Public Health:

All-India Health Act desirable, *Stiles Webb* 31,956-8.
All-India Sanitary Conferences, discontinuance of, but need for, *Stiles Webb* 32,014-7.
Assistant Medical Officers, training, qualifications and pay, *Stiles Webb* 32,073-5.
Baby welfare work, *Stiles Webb* 32,059-61.
Birth and death statistics in rural districts and towns, 1901-1925, *Stiles Webb* (412).
Budget, and increased allotment of funds to, as compared with medical budget desired, *Stiles Webb* 32,106-10.
DEPARTMENT:
Action taken by, in educating public opinion and imparting instruction *re* prevention of epidemic diseases and results of, *Stiles Webb* (412), 32,090-2.
Organisation in districts, *Stiles Webb* 31,907-11.
Organisation, and inadequacy of staff, *Stiles Webb* 31,904, 32,103.
Diseases, nature of, most virulent, *Stiles Webb* 32,044-7.
DISPENSARIES:
Epidemic, work of, and need for increase in number, *Stiles Webb* (413).
Number and system, *Stiles Webb* 31,907-8.
Placing under Public Health Department and not under Inspector-General of Civil Hospitals, question, of *Irwin* 31,376-8.
Touring, *Irwin* 31,182.
District Health Officers, need for appointment in large districts, *Stiles Webb* (412-3), 31,910.
DRINKING WATER:
Dearth of, in Berar, *Konde* 30,846.
Disinfection of wells in case of epidemics, *Stiles Webb* 31,941-2.
Improvement
must be Financed along with general improvement of rural areas, *Plymen* 27,756.
Measures being taken and progress of, and results, *Stiles Webb* 21,928-39.
careful Investigation necessary and appointment of special officer advocated, *Plymen* 27,755.
Well boring, work transferred to Public Works Department, *Plymen* 27,955-8.
Female hospitals, forthcoming establishment of, *Stiles Webb* 32,065-9.
Fevers, difference in mortality as between town and country, *Stiles Webb* 32,021-8.
Government scheme of sanitation in rural areas needed, *Pande* (536), 33,476-8.
Health officers, number, jurisdiction, etc., *Stiles Webb* 32,048-51.
Health Publicity officers, work of, *Stiles Webb* 31,909, 32,033.
Hookworm disease, work *re*, *Stiles Webb* 31,920, 31,927, 31,943-4
Hygiene instruction in primary schools, *Stiles Webb* 31,951-3, 32,012-4.
Hygiene lectures in jails, and question of extension, *Stiles Webb* 31,974-85.
Infantile mortality, *Stiles Webb* 32,043.
Influenza, 1918, mortality from, *Stiles Webb* 32,043.
Jail superintendents, *Stiles Webb* 32,101-2.
Journal for whole of India would be useful, *Stiles Webb* 32,017-8.
Lady doctors, *Stiles Webb* 32,062-4.
Leprosy, extent, of and measures taken *re*, *Stiles Webb* 31,986-97, 32,086-9.
MALARIA:
Connection of irrigation with, question of, *Stiles Webb* 32,083.
Eradication, expenditure on, rather than on distribution of quinine advocated, *Stiles Webb* 31,998-9, 32,097-100.
Extent of, *Stiles Webb* 31,919.
Quinine:
Distribution, *Stiles Webb* 31,916-7.
Prophylactical, disbelief in, *Stiles Webb* 31,969.

Public Health—*contd.*

MALARIA—*contd.*
Survey in 1912 by Major Kendrick, *Stiles Webb* 31,915, 32,072.
Surveys in selected areas desirable, *Stiles Webb*, 31,917-8, 31,967-73.
Municipal Engineers, *Stiles Webb* 32,052.
Physical condition of people in different districts, *Stiles Webb* 31,962-6, 32,029-30.
Private practitioners, subsidising of, in rural areas, *Irwin* 31,183.
Propaganda work, need for, *Stiles Webb* (412).
Public Health Museum would be useful, *Stiles Webb* 32,114-5.
Registration Act desirable owing to need for uniformity of vital statistics, *Stiles Webb* 31,956-8.
Registration of births and deaths, unreliability of, *Stiles Webb* 32,000-1.
Relations with Medical Department, Public Works Department, Irrigation Department, etc., *Stiles Webb* 32,038-9.

RESEARCH:
Institute, proposed establishment of, *Stiles Webb* (411), 32,034-7, 32,093-6.
Joint laboratory with Veterinary Department would be approved, *Stiles Webb* 31,924-6
Malaria Bureau, creation of, advocated, *Stiles Webb* (411), 31,968-73.
no Laboratory facilities in province, *Stiles Webb* 31,904-6, 32,002-5, 32,031-2.
Veterinary laboratory should be housed near, *Wilson* 30,913, 30,981-4.
Roundworm, *Stiles Webb* 31,920-3, 32,027.
Rural sanitation, attitude of District Councils, *Stiles Webb* 32,079-92.

SANITARY CONDITIONS:
in Different tracts, *Stiles Webb* 32,084-5.
Inadequate attention paid to, *Korde* (320).
Sanitary Engineer, need for, *Stiles Webb* 32,038, 32,105.
Sanitary Inspectors, number, functions, etc., *Stiles Webb* 32,053-8.
Sanitary progress, obstacles to, *Stiles Webb* (412).
Spleen index of children, work done in connection with, *Stiles Webb* 32,040.

TUBERCULOSIS:
believed to be Increasing throughout India, *Stiles Webb* 32,111-3.
so-called Sanatorium at Pendra, *Stiles Webb* 32,112.
Vaccinators, training and qualifications required, *Stiles Webb* 31,912-4, 32,006-9.
Venereal disease, *Stiles Webb* 32,045.
Village Sanitation Act, *Stiles Webb* 32,076-8
Village sanitation, proposal, *Stiles Webb* 31,945-50.
Vital statistics, collection method and defectiveness of system and proposal for improvement, *Stiles Webb* 32,071.
Water borne diseases, *Stiles Webb* 32,010-11.

Pusa Institute, *see under* **Research.**

Railways, *see under* **Administration.**

Rainfall, shortage of, and need for investigation into causes, etc., *Sahasrabudhe* 32,462.

Rate of exchange, *Dokras* 32,666; *Sahasrabudhe* (472), 32,468-9.

Research:
Agricultural Bacteriology, proposal for increased staff, *Plymen* (25).
Agricultural implement investigation, importance of, but difficulty of carrying out, *Allan* (197), (198).
Bureau for summarizing of work, proposal, *Plymen* (27), 27,547-50, 28,182-4.
as Central subject, probably desirable, *Irwin* (343), 31,260-1.

Research—*contd.*

Co-operation between officers of scientific sections of various provinces, *Plymen* 27,481-2.

DEPARTMENT:
should be Independent of administrative department of Agriculture, *Khaparde* (399).
Staff.
should be Indians, *Khaparde* (399).
Indians should be trained as, *Deshpande* (296), (297), 30,527-8.
Staff and distribution of work, *Plymen* (9-10).

Distribution between central and provincial institutions, question of, *Plymen* 27,929-33, 28,154-73

District research, increased facilities and funds needed, *Deshpande* (296).

Economy necessary, *Pandeya* (125).

Engineering and machinery improvement, *Plymen* (13).

FINANCING:
Cess on exports of agricultural produce, scheme, *Plymen* (24-5), 27,461-2, 27,467-9, 27,830-3, 27,847-52, 28,133-8; *Allan* (197), 29,636-8, 29,750-3, 29,824-8, (238-40).
Contributions from landholders, might be received if research profitable to their cultivation, *Deshpande* 30,447.
of General research, mainly by Central Government advocated, *Allan* (196), (201-2), 29,694-6, 29,721-4.
Government should provide funds, *Deshpande* 30,445.
of Local research by Local Governments advocated, *Allan* (196).
Suggestion for, and proposed charging of fees to agriculturists for making use of results, *Khaparde* (399), 31,873-4.
Taxation would not be favoured, *Deshpande* 20,675-6.

Fruit-growing, need for expert for, *Allan* 29,734-7.

Fundamental, carrying out of by central institute, proposal not agreed with, *Plymen* 27,929-33.

Government of India should send experts to study conditions in each Province, *Bharqava* (427)

Helminthic affections, work *re*, *Stiles Webb* (411)

Horticultural, lack of expert assistance, and proposal, *Allan* (197), 29,733-7.

Horticulturist, duties now carried out by other officers, criticism, *Plymen* (25).

Indian youths should be selected for work, *Pandeya* (125).

Lines on which required, *Plymen* (25); *Allan* (197-8), (198); *Deshpande* (296); *Khaparde* (399), *Stiles Webb* (411).

Malaria Bureau, creation of, advocated, *Stiles Webb* (411), 31,968-73.

Mycologist and Chemist, familiarity with work at Pusa and in other provinces, *Plymen* 27,486-7.

Nature of work, *Plymen* (11-12), 27,483-5, 28,271-81.

by Non-official gentlemen, suggestion for encouragement, *Deshpande* (296), 30,529.

ORGANISATION:
Central Body, scheme for, *Allan* (197), 29,639-42, 29,802-5, (202).
Crop Committees, scheme, *Plymen* (24-5), 27,461-2, 27,467; *Allan* (197), 29,640-2.
Criticism, *Deshpande* (296), 30,509, 30,520-6.
by Groups according to soil and climate, proposal, *Korde* (317), 30,690-3.
separate Institute for each Province advocated, *Korde* (317).

Plant breeding and botanical research, hampered until lately by lack of expert staff, *Allan* (197)

Provincial Research Committee, scheme for formation of, at Nagpur under chairmanship of Director of Agriculture, *Deshpande* (296), 30,443-7.

Public Health, *see that title.*

PUSA INSTITUTE:
little Benefit to Provincial Departments, *Plymen* 27,471-4, 27,480.

Research—*contd.*

PUSA INSTITUTE—*contd.*

Developed before organisation of provincial departments, *Plymen* 27,470, 27,834-5.

Development for central research work and post-graduate training would be approved, *Plymen* 28,267-9.

Excellent work done by, and desirability of development, *Sahasrabudhe* (452).

Post-graduate training, sending of men to England probably more useful, and proposal *re*, *Plymen* 27,489-99.

Recruitment to, opinion *re*, *Plymen* 28,121-8, 28,153.

Training at, question of, *Plymen* 27,836-7, 27,839-44, 27,845.

Relations between Agricultural Advisor to Government of India and Provincial officers and suggestions for better co-ordination, *Sahasrabudhe* (452).

Results must be brought to notice of cultivators, *Deshpande* (296).

SCIENTIFIC STAFF:

Particulars *re* qualifications required, etc., and need for increase, *Plymen* 27,921-8, 28,180-1.

Separation from teaching staff desirable, *Plymen* 27,922, 27,927.

SCIENTIFIC STAFF of Government of India, increase

not Advocated, *Kotde* (318), *Khaparde* (400), *Pande* (530).

Increased propaganda work advocated in preference, *Deshpande* (298).

would be Useful, *Bhargava* (427).

into Scientific value of indigenous theory and traditional methods, extent of scope for, *Khaparde* (399).

Soil Investigation, lack of staff and equipment, *Allan* (197).

SOIL PHYSICS.

increased Attention to, desirable, *Plymen* (25)

Need for, *Allan* (198)

Veterinary, *see that title.*

Visits of officers to other parts of India useful, *Plymen* 27,488

Rice, *see under* **Crops.**

Rinderpest, *see under* Contagious diseases *under* **Veterinary.**

Roads, *see under* **Administration.**

Rope making, *see under* **Agricultural Industries.**

Rural economics, ignorance of politicians and town people, *Dwarkanath Singh* (506), 32,759-61.

SAHASRABUDHE, Rao Sahib G. N., Pleader, Ellichpur, Amroati district: (452-472), 32,425-32,490.

Agricultural operations, 32,470-81.

Experience of, (452).

ADMINISTRATION:

Meteorological Department, increased use should be made of, by Department of Agriculture and information published to agriculturists, (458).

Meteorology, lectures on relation of agriculture, and suggestion (458).

Postal and telegraph services, satisfactory, (458).

Railways:

Opening of branch railways advocated, (457).

Reduced inland rates for rural produce advocated, (457).

Roads, Village:

Condition of, under District Councils not satisfactory, (457).

Suggestions for improvement, (457).

AGRICULTURAL DEPARTMENT, policy, 32,441-2, 32,478.

AGRICULTURAL OFFICERS, recommendations *re* attitude towards farmers, (456-7).

SAHASRABUDHE, Rao Sahib G. N.—*contd.*

AGRICULTURAL INDEBTEDNESS :
Alienation of lands, restriction not advocated, (460).
Causes of, (459), (459-60).
Credit, sources of, (458), (460).
Education the only remedy, (460).
among Kunbis, 32,428.
Measures for lightening burden of debt, (460).
Money-lenders' Act, passing of, as in the Punjab, proposed, (460).
Money-lenders, system and evils of, (459), (460).
Mortgages, long-term, advantages over short-term, (459).
Rate of interest, lowering of, and prohibition of compound interest by legislation proposed, (460).

AGRICULTURAL INDUSTRIES :
Co-operative Industrial Societies, formation suggested, (465).
Dehydrogenation, industry of drying vegetables, proposal *re*, (464), 32,434-6.
Fish culture and poultry keeping, Kunbis would not take up, 32,458.
Fruit growing, water supply difficulty, (464)
Government must start small industries, (466).
Instruction of rural people in, scheme, (464).
Mango trade, recommendation by Committee of enquiry appointed by Bombay Government, (464).
Obstacles to development of small industries, and proposed remedies, (465)
Paper pulp and paper making from cotton stalks, experiments and proposal *re*, (463-4), (466), 32,431-3.
Proposals, (464-5)
Rope making, (465).
Subsidiary industries
previous Enquiries into, (465).
Need for, (463).
Time spent by cultivators on holdings, (464-5).
Weaving and suggestion *re* opening of School, (466).
for Women, need for, (465).

ANIMAL HUSBANDRY
Bulls, purchase of, at high cost from foreign countries, objection to, (463).
Cattle-breeding and dairy farm, forthcoming establishment at Ellichpur, (463).
Cattle-breeding farms, (463)
Prizes to cattle breeders, continuance and development of system advocated, (463)

BERAR, agricultural conditions in, (460-1), 32,428.

CO-OPERATION :
Central Banks, rate at which loans lent to primary societies, 32,463.
Loans from Co-operative Central banks and credit societies :
Rate of interest too high, (459), (460).
Supervision over use of money advanced, need for, (459), (468), 32,485-90.
Value of, (460).

CROPS
Combination of, in America, advantage of, (462).
Cotton :
increased Cultivation, 32,453.
increased Production per acre should be considered, (462), 32,465
Damage by wild animals :
Pigs, (462).
Prevention methods, (462).
Gardens and orchards, Berar, but reduction latterly, (461).

SAHASRABUDHE, Rao Sahib G. N.—*contd.*

CULTIVATION:
Improved methods, little progress made, (457).
Productive power of land, not increased with increased expenditure, 32,451-3.
Rotation in Berar, (462).

DEMONSTRATION AND PROPAGANDA:
Agricultural Conferences, resolutions passed by, but not translated into vernacular and no action taken on, (456), 32,439.
American methods, and tribute to, (456, 457)
Cattle breeding farm at Boregaon, (455).
Demonstration Farms:
Carrying on of, on commercial basis, desirability and possibility of, (455), 32,426-7.
Effectiveness of, question of, (455)
at Yeotmal and Basim, (455)
Departmental resolutions, etc, increased translation of, into vernacular and free distribution necessary, (456), 32,439
Experimental Farms
Akola, (455).
Profitable carrying on of, not possible, (455)
Policy advocated and American and English ideals should be followed, (456)
Poona Agricultural Show, steps should be taken to bring results before people, (461), 32,439.
Propaganda work, importance of, (456).
Seed Farm at Boregaon, (455)

EDUCATION:
Adult, libraries and reading rooms in villages should be established with Government assistance, (455).
Agricultural
Facilities, inadequacy of, (453).
Practical instruction after leaving Agricultural college necessary, and proposal, (469), 32,438
Teachers
Agricultural Training school in Berar, establishment advocated, (453).
Practical course necessary after leaving Agricultural College, (453).
Vernacular Middle Schools
Number of, in different provinces and number of scholars, (455).
Requirements for establishment of, and proposals, (453).
Defects of present system, (468-9).
Gardening, advocated, (469).
Industrial and agricultural bias, importance of providing for (468-9).
Interest in, by rural people, proposed measures for encouraging, (453-4).
Nature study, advocated, (469).
Primary:
Compulsory:
Compulsory establishment, proposal for Government encouragement, (453).
Need for, (469).
Position *re*, and proposals for increase in attendance, (454-5), 32,454-6.
Curriculum must be such as to create agricultural and industrial bias in minds of boys, (453).
Gardening instruction, proposal, (453).
Teachers, importance of attitude of, and requirements, (469-70).

SAHASRABUDHE, Rao Sahib G. N.—*contd.*

FERTILISERS:
Artificial, preparation by Government and distribution at cheap rate, suggestion, (462).
Cattle urine, instruction of people in use of, advocated, (462).
Cowdung:
Instruction of people in use of, advocated, (462).
Use as fuel, supply of fuel to villages by Forest Department proposed, (462).
Dry leaves, suggested utilisation of, (462).
Manure depots in each village or group of villages, proposal, (461-2).
from Phosphatic mines, suggestion, (462).
Supply to landholders by Agricultural Department at cheap rate, need for, (461-2).
Urgent need for supply, (461).

FINANCE:
Land mortgage bank, opinion *re* proposal, (459), (460).
Taccavi loans, procedure, criticism of, and proposed alteration, (459), 32,464.

FORESTS
Forest produce, facilities should be allowed to villagers to make use of, (467).
Fuel supply to villagers from, proposal, (467).
Grazing
increased Provision desirable and policy advocated *re*, (466-7).
Statistics of areas, revenue from fees, etc., (467), 32,466-7.
Management of portion of area by Panchayats, proposal, (467).

IMPLEMENTS:
Local manufacture and encouragement desirable, (463).
New:
Requirements, (463).
Use of, (463).
for Weeding and inter-cultivation, need for, (463).
Victoria Technical Institute, Amraoti, (463).

IRRIGATION:
Utilisation of surplus rainfall, processes demonstrated at Poona Agricultural exhibition, 1926, should be studied by agricultural officers in Berar, (461).
Wells:
Provision of, in Berar, need for, and suggestions *re*, (460-1), 32,428.
Purchase of pump and engine on hire purchase system desired. 32,429-30.

MARKETING.
Cotton, system in Berar, (467-8).
Grain, system in Berar, (467-8).
Municipal Committees, system, (467).
Weights and Measures:
Inspection, 32,443-6.
Standardisation advocated, (468), 32,437.

RAINFALL, shortage of, and need for investigation into causes, etc., 32,462.

RATE OF EXCHANGE, (472), 32,468-9.

RESEARCH:
Pusa Institute, excellent work done by, and desirability of development, (452).
Relations between Agricultural Advisor to Government of India and Provincial officers and suggestions for better co-ordination, (452).
U S.A., Department of, Agriculture, policy of, (471-2), 32,447.

SAHASRABUDHE, Rao Sahib G. N.—*contd.*

STATISTICS:
Collection by village officers, defects of system, (470-1).
Field, defects of system, (470-1), 32,439.
Improvements, need for, (470-1).

VETERINARY, Muktesar Institute, relations between superior officers at, and Provincial officers and suggestions for better co-ordination, (452).

WELFARE OF RURAL POPULATION:
Economic surveys in typical villages, objections to, (470).
Facilities required for, (470).
Model villages, scheme, (454), (458).

Sann hemp, *see under* Fodder *under* Animal Husbandry, *under* **Crops**, *and under* Green Manure *under* Fertilisers

Scarcity, relief works during, *Plymen* 27,981-3

Sea freights, prosperity of cultivators injured by, and change advocated, *Bhargava* (430).

Seeds, *see under* **Crops.**

Sericulture, *see under* **Agricultural Industries.**

Sihora Agricultural Association, evidence on behalf of, see Pande, K. P., (529-539), 33,185-33,558.

Soils:

BUNDING:
Encouragement advocated, *Pande* (531).
Improvement of soils by, *Khaparde* (402); *Pande* (531), *Dokras* (481).
System, *Plymen* (28).

Chemicals taken away by different crops, work re, *Plymen* 28,022-5.

Cultivable land gone out of cultivation, proposed measures for reclamation: *Bhargava* (428), *Khaparde* (402).

Deterioration owing to growth of *kans* grass, and measures adopted for dealing with, *Plymen* (28), 27,599-305, 28,026-9, 28,232-3; *Irwin* (344), 31,262-5, 31,308-9.

DRAINAGE.
Better drainage during monsoon desirable in certain cases, *Allan* (203).
Draining off rain water, need for, in Berar, and proposed measures, *Khaparde* (402).
of Waterlogged land, proposals, *Plymen* (28).

EROSION:
from Deterioration of forests, not serious, *Pande* (537).
Extent of problem, *Plymen* 28,249-51; *Witt* (278), 30,374; *Pande* (537).
Means of preventing, *Dokras* (481), 32,650-1.
by Monsoon rains, and preventive steps advocated, *Plymen* (33).

Excess water, co-operation amongst cultivators for removal of, desirable, *Plymen* (28).

Fertility, decreasing, *Dwarkanath Singh* 32,705-9.

IMPROVEMENT:
by Bhandhwas system, with subsequent deterioration after about thirty years, *Bhargava* (428).
on some Government farms, *Plymen* (28).
Levelling and bunding, example, *Dokras* (481).
Means of, *Dokras* (481).

Research, *see that title.*

Resting of, from irrigation, in areas where wells unsuitable for irrigation, *Plymen* (28).

Retention of moisture, experiments carried out, *Plymen* 28,271.

no organised Survey carried out, but certain work being done, *Plymen* 27,596-8.

Uncultivated cultivable land, *Plymen* 28,074-6.

Statistics:

AREAS UNDER CULTIVATION:
sufficiently Accurate in general, *Plymen* (35).
Collection by village Patwaris, and substitution of another agency would be expensive, *Pande* (539).
Arrangement and publication should be carried out by Department of Agriculture, *Pande* (539).

COLLECTION:
Methods in Central Provinces sufficiently accurate, *Irwin* (347).
by *Patwaris*, defects of system, *Amanat Ali* (388), 31,738-40.
Trained agriculturists should be appointed as *Patwaris* or duties transferred to Agricultural Assistants, *Amanat Ali* (388).
by Village officers, defects of system, *Sahasrabudhe* (470-1).

CROP FORECASTS:
Extent of responsibility of Agricultural Department, *Plymen* 28,151-2.
System, *Plymen* 28,234-46, 28,260-1.
Field, defects of system, *Sahasrabudhe* (470-1), 32,439.
Imports and exports of foods, question of availability, *Plymen* 28,058-61.
Improvements, need for, *Sahasrabudhe* (470-1).
Live stock and implements, reliability of, *Plymen* (35).
Persons should be deputed to study American system, *Pande* (539)
Vital, collection method and defectiveness of system and proposal for improvement, *Stiles Webb* 32,071.

YIELD OF AGRICULTURAL PRODUCE:
Crop cutting experiments needed and increased staff required for, *Plymen* (35).
Estimation by executive officers, objection to, *Pande* (539).
Taking only one-tenth acre for experiments, method should be changed, *Pande* (539).

STILES WEBB, Lieutenant-Colonel H. G., D.P.H., D.T.M. and H. (Camb.), I.M.S., Officiating Director of Public Health, Central Provinces. (411-13), 31,900-32,122.

DISTRICT COUNCILS, attitude *re* rural sanitation 32,079-82

EDUCATION:
Primary schools, instruction in hygiene, 31,951-3, 32,012-4.
Robertson Medical School, 32,116-9.

PUBLIC HEALTH.
All-India Health Act desirable, 31,956-8.
All-India Sanitary Conferences, discontinuance of, but need for, 32,014-7.
Assistant Medical Officers, training, qualifications and pay, 32,073-5.
Baby welfare work, 32,059-61.
Birth and death statistics in rural districts and towns, 1901-1925, (412).
Budget, and increased allotment of funds to, as compared with medical budget desired, 32,106-10.
Department:
Action taken by, in educating public opinion and imparting instruction *re* prevention of epidemic diseases and results of, (412), 32,090-2.
District Health Officers, need for appointment in large districts, (412-3), 31,910.
Organisation and inadequacy of staff, 31,904, 32,103.
Organisation in districts, 31,907-11.
Relations with Medical Department, Public Works Department, Irrigation Department, &c., 32,038-9.
Diseases, nature of most virulent, 32,044-7.
Dispensaries:
Epidemic work of, a need for increase in number, (413).
Number and system, 31,907-8.
Female hospitals, forthcoming establishment of, 32,065-9.

STILES WEBB, Lieutenant-Colonel H. G.—*contd.*

PUBLIC HEALTH—*contd.*
Fevers, difference in mortality between town and country, 32,021-8.
Health officers, number, jurisdiction, &c., 32,048-51
Health Publicity officers, work of, 31,909, 32,033.
Hookworm disease, work *re*, 31,920, 31,927, 31,943-4.
Hygiene instruction in primary schools, 31,951-3, 32,012-4.
Hygiene lectures in jails, and question of extension, 31,974-85.
Infantile mortality, 32,043.
Influenza, 1918, mortality from, 32,043.
Jail superintendents, 32,101-2.
Journal for whole of India would be useful, 32,017-8.
Lady doctors, 32,062-4.
Leprosy, extent of, and measures taken *re*, 31,986-97, 32,086-9
Malaria.
Connection of irrigation with, question of, 32,083.
Eradication of, expenditure on, rather than on distribution of quinine advocated, 31,998-9, 32,097-100.
Extent of, 31,919
Quinine.
Distribution, 31,916-7.
Prophylactical, disbelief in, 31,969.
Survey by, in 1912, Major Kendrick, 31,915, 32,072.
Surveys in selected areas desirable, 31,917-8, 31,967-73
Municipal Engineers, 32,052.
Physical condition of people in different districts, 31,962-6, 32,029-30.
Public Health Museum would be useful, 32,114-5
Propaganda work, need for, (412)
Registration Act desirable owing to need for uniformity of vital statistics, 31,956-8
Registration of births and deaths, unreliability of, 32,000-1
Research:
Joint laboratory with Veterinary Department would be approved, 31,924-6.
no Laboratory facilities in province, 31,904-6, 32,002-5, 32,031-2.
Roundworm, 31,920-3, 32,027
Rural sanitation, attitude of District Councils, 32,079-92
Sanitary conditions in different tracts, 32,084-5.
Sanitary Engineer, need for, 32,038, 32,105.
Sanitary Inspectors, number, functions, etc., 32,053-8.
Spleen index of children, work done in connection with, 32,040.
Tuberculosis
believed to be Increasing throughout India, 32,111-3.
so-called Sanatorium at Pendra, 32,112.
Vaccinators, training and qualifications required, 31,912-4, 32,000-9.
Venereal disease, 32,045
Village sanitation, proposal, 31,945-50.
Village Sanitation Act, 32,076-8.
Vital statistics, collection method and defectiveness of system and proposal for improvement, 32,071.
Water-borne diseases, 32,010-11.
Water supply
Disinfection of wells in case of epidemics, 31,941-2.
Improvement, measures being taken and progress of, and results, 31,928-39.

RESEARCH:
Helminthic affections, work *re*, (411).
proposed Lines of, (411).
Malaria Bureau, creation of, advocated, (411), 31,968-73.
Public Health (Research) Institute, proposed establishment of, (411), 32,034-7, 32,093-6.

WELFARE OF RURAL POPULATION:
Salvation Army institutions, question as to existence of, 32,122
Sanitary progress, obstacles to, (412).
Weakness of agriculturists physically and mentally, 31,903.

Sugar:

GUR:

improved Boiling furnace, *Dubey* (102).
Shortage of, and importation, *Dubey* (105), 28,704, 28,708-12.
Gur making only, *Plymen* 28,009-10, 28,017.
White, shortage of, *Dubey* 28,709.

Sugarcane:

Acreage, decrease and reason, *Plymen* 27,822-3.

COIMBATORE.

Cultivation of, *Plymen* 27,773-5.
Experience of, *Dubey* 28,454-9, *Bhargava* 32,301-3.
Hardness of canes and need for suitable crushing mill, *Dubey* (105), 28,454-7.
Value of, *Plymen* 27,478-9.

Coimbatore station, value of, *Plymen* 27,480; *Allan* (197).
Condition of cultivation in Balaghat District, *Dubey* 28,539-44.
Crushing mill, introduction of improved, *Dubey* (102).
Cultivation, improvements in, as result of demonstration, *Plymen* (14-15).
new Furnace, benefits derived from introduction of, *Plymen* (15).

FERTILISERS:

Ammonium sulphate, successful use, *Bhargava* (428).
Introduction of, efforts, *Dubey* (102).
Karanja cake, value of, *Plymen* 28,188-90.
Improved varieties, introduction of, *Plymen* (16); *Dubey* (102).
Irrigation, *Dubey* (104).
Works not suitable for, *Pollard-Lowsley* 28,946.
Manuring, *Allan* (203), (204), *Dubey* (104), 28,470-2, 28,749-62.
Mills suitable for small cultivators, need for, and suggestions, *Dubey* (105).
Personal experience, *Dubey* 28,450-9, 28,507, 28,544-51, 28,736-40.
Profit per acre, *Dubey* 28,544-5.
Rotation, *Plymen* 28,011-6.
Watering required, *Plymen* 28,019-21.

Taccavi advances, *see under* **Finance.**

Tanks *see under* **Irrigation.**

Telegraph facilities, *see under* **Administration.**

TRIVEDI, C. M., I.C.S., Registrar, Co-operative Societies: (168-172), 29,202-29,619.

Experience of, 29,204-7.

CO-OPERATION:

Agricultural Associations, 29,263-7.
Banking crisis of 1921 and causes of, 29,446-9.
for Betterment of village life, scope for, (172).
Cattle-breeding societies, in Raipur district formerly, but closure owing to lack of interest, (172), 29,334-5, 29,575-8.
Central Banks:
Control over, extent of, 29,349-57, 29,359-62.
Deposits, (172)
Directors, 29,530-2, 29,568-9.
Dividend, 29,497.
Inspectors, class of men, &c., 29,457-61.
Managers, class of men, &c., 29,454-6.
Number, (168).
Particulars *re*, working of, &c., 29,336-57, 29,496.
Results, (172).
Compulsion on minority to join as members of co-operative societies for joint improvement, objection to, (172).
Co-operative Institute, Berar, system, (170).

TRIVEDI, C. M.—*contd.*

CO-OPERATION—*contd.*

Co-operative Institute for Jubbulpore and Nerbudda Divisions, working of, (169).

Credit Societies.

Accounting and audit, (169), 29,270-9, 29,285-6, 29,469.

Application and granting of loans, procedure, 29,244-61, 29,450-3

Bye-law that members should send boys to school, one case of, 29,616.

Consolidation of movement, concentration of efforts on, advocated, (171), 29,262.

Contribution by one society for purchase of quinine, 29,617.

Deficit, meeting of, by Government, proposal, (169).

Deposits, (172).

Education and supervision of:

by Central Banks, and drawbacks of system, (169), 29,243-61, 29,363-5, 29,425-7.

Reorganisation of system, proposals for, and measures taken, (169-70), 29,270-82, 29,407, 29,489.

Effect on rates charged by moneylenders, 29,550-2.

Failure, statistics, 29,216-7.

Federation subscription levied from members, proposed abolition, (169).

Improvement of movement, proposals for, (171).

Joint liability, enforcement

in Certain cases and effect on reputation of movement, 29,218-20, 29,237.

Policy *re*, 29,221-5.

Loans from Central Banks, system, 29,420-2

Loans for purchase of implements, and joint purchase in one case, 29,618.

Liquidations, effect on confidence in movement, question of, 29,392-4.

Members borrowing both from, and from moneylenders, common, 29,287-8.

Members, borrowing from moneylenders or malguzars, 29,408-10.

Organisation, procedure, 29,398-9.

Rates of interest charged, 29,397, 29,493-4.

Reserve funds, policy *re*, 29,490-5.

Results and position of, (172), 29,496.

Sanitation not taken up by, 29,616-7.

Statistics, (170-1), 29,485-8.

Success of movement in Berar as compared with Central Provinces, 29,404-6.

Successful society, features of, and results, 29,400-3.

Supervision by Government auditors desired, 29,428-9.

Winding-up, policy and procedure, 29,226-39, 29,374-85, 29,499-504, 29,533-6, 29,588-91.

Working of, (171).

Defective organisation and defective education of members, 29,579

Department:

Circles, increase to five, desirability of, (168-9).

no Co-operation with Education Department, 29,505-7.

Organisation of, (168).

Encouragement of growth of, material advantages must be made clear to people, 29,390-1.

Expenditure on, and need for increase, 29,411-2, 29,508.

Federation Auditors, class of men, 29,467-8.

Gond Societies, 29,594.

Government assistance, extent of, &c , 29,509-12, 29,537-40.

Government financial assistance during banking crisis in 1920-21, 29,366-8.

History of movement, 29,209-13.

Honorary workers and non-official agencies, value of, and scope for, work by, (170).

TRIVEDI, C. M.—*contd.*
CO-OPERATION—*contd.*
Impulse must come from within, not from the State, 29,598-9
Joint farming societies, question of, (172).
Land mortgage banks, Berar, scheme under consideration, (170), 29,386-9.
Lectures in normal schools by inspector of Berar Co-operative Central Institute, 29,506.
Local instructors, recruitment method and salaries, 29,595-7.
Non-co-operation movement, effect of, 29,395-6.
Non-credit societies, loan from Central Bank to agricultural association, 29,423.
Non-official agency, extent of assistance received from, and scope for, 29,413-8, 29,475-84, 29,541-9.
Obstacles to growth of movement, (170), 29,470.
Position more satisfactory than two years ago, 29,268.
Primary Societies, number, (168).
little Propaganda for education of public in principles of co-operation in villages, 29,240-2.
Provincial Bank
Cash credit with Imperial Bank, 29,369-72, 29,561-7.
Deposits, (172).
Dividend, 29,497.
Position of, 29,496.
Relations with Central Banks, 29,359-61.
Results, (172).
Registrar, whole-time officer, would be desirable, and necessary if work of Industries Department expands, 29,438-9.
Sale Societies.
Co-operation of Agricultural Department, necessity for, (171).
Cotton sale societies, (171), 29,289-330, 29,515-29, 29,573-4.
Rice sale societies, formation in Bilaspur district to be considered, (171).
Seed societies, 29,619
Societies for aggregation of fragmented holdings and redistribution in plots of reasonable size, possibility of, in Bilaspur, but not in other parts, (171-2), 29,332-3.
Societies under liquidation, number, (168).
Societies for co-operative use of agricultural machinery:
Essentials for success, (172).
Scope for, and consideration advocated, (172).
Staff
Clerks and auditors, pay considered adequate to secure honesty, 29,614-5.
Courses at Agricultural College under consideration, 29,514
Knowledge of "The Law and Principles of Co-operation," question of, 29,462-6.
Recruitment from Nagpur Agricultural College graduates under consideration, 29,586-7.
Training, 29,580-7.
Sweepers' societies, 29,473-4.
Transmission of money between central Banks and societies, refund of three-fourths of money order commission advocated, (170)
Unlimited liability, sale or encumbering of land in order to pay contribution, a few cases of, 29,600-13.
CROPS, change to money crops from food crops, effects, 29,559 60, 29,571-2.
EDUCATION, COMPULSORY, formation of co-operative societies for, desirable, (172), 29,436-7.
HOLDINGS:
Consolidation:
by Co-operation, *see that title above.*
Visit of Mr. Roughton and others to the Punjab in connection with, 29,433-5, 29,440-1.
Fragmentation, evil of, Chhattisgarh, (171).

TRIVEDI, C. M.—*contd.*

LAND SYSTEM, occupancy holdings, percentage, 29,232.

TACCAVI LOANS, issue through co-operative societies, question of possibility and method, 29,430-2.

Tuberculosis, *see under* **Public Health.**

U.S.A., policy of the Department of Agriculture, *Sahasrabudhe* (471-2), 32,447.

Usurious Loans Act, *see under* **Agricultural Indebtedness.**

Vegetable growing, *see under* **Agricultural Industries.**

Venereal Diseases, *see under* **Public Health.**

Veterinary:

Ancient methods should be studied and systematised, *Korde* (317).
Apathy of District Councils, *Irwin* 31,310-19.

ASSISTANTS:
few Complaints received of, *Wilson* 30,959.
Demanding of fees by, *Amanat Ali* (387), 31,844-7.
Pay, *Wilson* 30,958.
Tours by, value of, *Irwin* (345).
Board of Veterinary Studies, need for, *Wilson* 30,913.

CIVIL VETERINARY DEPARTMENT:
close Co-operation with certain other departments necessary, *Plymen* (30); *Deshpande* (302).
Control by Director of Agriculture:
Advocated, *Korde* (319); *Amanat Ali* (387); *Bhargava* (429); *Dokras* (483).
not Desirable, *Plymen* (30), *Dubey* (105).
Independence of Director of Agriculture:
should Continue, *Wilson* (332).
not Necessary, *Pande* (533).
should be Independent if Director of Agriculture a technical officer, *Irwin* (344).
Control of animal husbandry operations by, rather than by Agricultural Department desirable, but not suitable in Central Provinces, *Wilson* 30,929-36, 31,031-8.
Relations with Agricultural Department, *Wilson* 30,913, 30,955.
College, desirable, *Wilson* 30,918-9, 31,039-46.

CONTAGIOUS DISEASES:
Delay in treatment and need for increased staff, *Dubey* 28,554-6.
Examination of herds coming in from Native States desirable, *Irwin* (345).
Legislation.
not Advocated, *Dokras* (483).
Desirable at present, *Pande* (534).
Impossible owing to religious scruples of the Hindus, *Wilson* (333).
Objections to, *Khaparde* (404).
not considered Possible, *Irwin* (345).
Methods of dealing with, education and teaching of animal hygiene in elementary schools, *Wilson* (333).
Nature of, *Wilson* 30,985-7.
Obstacles in way of dealing with, *Wilson* (333); *Irwin* 31,320; *Pande* (534).
Propaganda recommended, and failing success, legislation, *Bhargava* (429).
Reporting of:
by Patwaris, system and delay, *Wilson* 30,989-91.
Post cards for, improvement from, *Wilson* 30,989.
Rinderpest:
Immunisation against, question of cost, and percentage of cattle worth, *Wilson* 31,047-52.
Incidence and mortality from, *Wilson* 20,971-4.

Veterinary—*contd.*

CONTAGIOUS DISEASES—*contd.*
Staff dealing with contagious diseases should be under sole control of veterinary officer in charge of province, *Wilson* 30,909-12.
Trained agriculturists should be appointed as *Patwaris* and Revenue Inspectors, *Amanat Ali* (387-8).
Troubles from borders, *Wilson* 30,975-9.
little Co-ordination between work of provinces and Indian States, *Wilson* 30,909.

DISPENSARIES:
Assistants
Transfer to control of local bodies advocated, *Pande* 33,256-61.
Work satisfactory, *Wilson* 30,956.
Classes of, and control, *Wilson* (332).
Control.
by District Boards. *Dubey* (105).
Apathetic attitude of District Councils, *Irwin* (345), 31,085-7.
Nominally but Board has insufficient control, *Bhargava* (429).
Responsibility not realised by Boards owing to dual control with Government, *Pande* (533)
Satisfactory working of system in some places, *Korde* (319), 30,730-1.
Working well, *Dokras* (483)
by Extra Assistant Directors of Agriculture desirable, *Pande* (534)
Transfer to Provincial Authority
not Advocated, *Korde* (319), *Bhargava* (429), *Dokras* (483).
greater Efficiency would result, *Irwin* (345), 31,085-7.
not Objected to if kept in touch with local needs, *Pande* (533)
should be Partial only, *Wilson* (332).
Expansion:
Inadequate, *Korde* (319), *Wilson* (332), *Irwin* (345), *Bhargava* (429)
will become Necessary, *Dokras* (483).
Needed, *Pande* (533).
None noticeable, *Dubey* (105).
too Far from villages, *Dubey* (105); *Pandeya* (126), 28,790-4, *Bhargava* (429), 32,234-7, 32,278
Local Fund, more interest should be taken in by local board members, *Wilson* (332)
Profits from cattle-pounds should be applied to, *Irwin* (345).
Staff, suggestion re, *Amanat Ali* (387).
one Surgeon should be attached to each, separate from touring assistant surgeons, *Dokras* (479-80), (483).
Touring:
not Fully used except during outbreaks, *Dubey* (105)
Importance of work, *Wilson* (333).
Inadequate stock of medicines, *Pandeya* (126)
little Known of, *Pande* (534).
None, *Dokras* (483).
None, but desirable, *Irwin* 31,181-2.
Used largely by malguzars but not fully by cultivators, *Wilson* (333).
Treatment and medicines too expensive, *Bhargava* (429).
Use of:
Extent of, and reasons for use not being greater *Khaparde* (404).
Full use not made of, and reasons, *Korde* (319); *Irwin* (345); *Amanat Ali* (387), 31,713; *Bhargava* (429), 32,234-7, 32,278; *Dokras* (483); *Pande* (533)
Inadequate, *Wilson* (332).
Increase should be encouraged by propaganda and demonstrations and suggestions for, *Wilson* (333).

Veterinary—*contd.*

DISPENSARIES—*contd.*
Used generally only for inoculation and castration, *Bhargava* 32,236.
Disposal of diseased carcases, legislation advocated, *Dubey* (106).
Doctors and subordinate officers, strength should be increased in every district, *Pandeya* (126).
Indigenous methods, use of, *Korde* (319), 30,809-10, 30,830-9; *Bhargava* 32,233-4, 32,280-2.
Inspectors, posts should be abolished and the men appointed to take charge of dispensaries at big towns, *Dokras* (480).
Isolation and disinfection necessary at present until accommodation available for segregation, *Dubey* (105).

MEDICINES
Mulguzars should have stock of, and be trained to use, *Dubey* (105), 28,669-70.
Patwaris should hold stock of, and be instructed in cattle diseases and their treatment, *Pandeya* (126)

NON-CONTAGIOUS DISEASES
Cases treated, number 1901-4 and 1020-23, *Wilson* 30,998.
Treatment, *Wilson* 30,988.
for Ordinary diseases, man of lower subordinate service in every Revenue circle desirable, *Pande* (533-4).
Pamphlets in vernaculars dealing with diseases and medicines should be published, *Pande* (534)

PREVENTIVE INOCULATION:
Compulsory, advocated, *Dubey* (106).
tremendous Demand for, *Wilson* 30,945.
no Fee charged, *Dubey* (106); *Bhargava* (429); *Dokras* (483); *Pande* (534).
Number of cases, 1901-1905 and 1920-25, *Wilson* (333), 39,995
Obstacles in way of popularising, *Wilson* 30,996, *Pande* (534).
no Obstruction, *Dokras* (483).
becoming Popular with people, *Bhargava* 32,238-9.
Practice of, *Dubey* (106)
Propaganda necessary, *Bhargava* (429).
Simultaneous, desirable and under consideration but increase of staff necessitated, *Wilson* 30,946-52.
Propaganda work should be increased, *Pande* (534).
Public health aspect of work, *Wilson* 30,913, 30,937-9
Public interest increasing, *Irwin* 31,318.

RESEARCH:
Economy necessary, *Pandeya* (125).
Further facilities necessary, *Wilson* (333), 30,921-8.
Indian youths should be selected for work, *Pandeya* (125).
Laboratory should be housed near public health research laboratory, *Wilson* 30,913, 30,981-4.
Laboratory staff attached at Nagpur, *Wilson* 30,992-3.
Muktesar Research Institute.
Relations with proposed provincial institutes, *Pande* (534).
Relations between superior officers at, and Provincial officers and suggestions for better co-ordination, *Sahasrabudhe* (452).
Work of, and of branch at Bareilly, etc., *Wilson* (332).
Piroplasmosis the most important need, *Wilson* 30,994.
Provincial veterinary Research Institutes:
in Each province, proposal, *Pande* (534).
Needed, *Plymen* (25), (30), 28,139-40; *Irwin* (342).
Setting up of, scheme, *Wilson* (333), 30,913, 30,921-8, 30,980, 30,999.

SERUM:
Difficulty experienced in obtaining, *Pande* (534).
no Difficulty in obtaining, *Dokras* (483).
Making of, in provincial institute not advocated, *Wilson* 30,940-4.
no Shortage, *Bhargava* (429).
Supply of, and suggestions for facilitating, *Wilson* (333).

Veterinary—*contd.*
SERVICE:
Improvement since introduction of Reform scheme, *Pande* (530).
Control by Agricultural Department should be increased, *Bhargava* (427), 32,278.
Satisfactory, with resources at disposal, *Irwin* (343).
not Satisfactory, *Korde* (318).
Simpler methods and medicines should be used, *Bhargava* (427).
STAFF:
Expansion scheme, *Wilson* 30,964-70.
Increase advocated, *Plymen* (30); *Dokras* (479).
should Mix more with cultivators and train people in using simple medicines and preparing medicines, *Dubey* (102).
Officers, criticism of, *Pandeya* (126), 28,814-5.
Particulars *re*, *Wilson* 20,916-7, 30,960-3.
Recruitment from outside province owing to lack of training facilities and drawback of, *Wilson* 30,918, 31,019-26, 31,039-46.
Training at Madras, found most satisfactory, *Wilson* 31,022-5
Subordinates of, attitude of, *Deshpande* (298).
SUPERIOR VETERINARY OFFICER WITH GOVERNMENT OF INDIA:
Appointment, Advocated, *Wilson* (333), 30,909.
proposed Functions, *Wilson* (333), 30,909.
Surgeons, appointment by Agricultural Department for work on cattle farms, suggestion, *Dubey* (105).

Weaving, *see under* **Agricultural Industries.**

Weights and Measures, *see under* **Marketing.**

Welfare of Rural Population:
Amusements should be increased, *Brahma* (250), 30,162.
Concentration on education, agriculture, rural sanitation and health advocated, *Plymen* 27,761-2.
Conditions, variation of, in different districts and question of reason, *Irwin* 31,196-210, 31,245-6.
Economic position of cultivators, *Irwin* (343), 31,278-9, 31,286.
ECONOMIC SURVEYS OF TYPICAL VILLAGES
by Committee on which representatives of the people a majority, proposal for, *Khaparde* (408)
Desirable and suggestions *re* method of carrying out, *Plymen* (35), 28,111-4; *Brahma* (250); *Dokras* (485); *Dwarkanath Singh* (505-6); *Pande* (538-9).
by Government, advocated, *Korde* (320).
Objections to, *Sahasrabudhe* (470).
Results of, to show that no profit possible in cultivation of land, *Irwin* (347), 31,276-7.
Work carried out, *Plymen* (35).
Facilities required for, *Sahasrabudhe* (470).
Government financial assistance needed, *Pande* (538).
Health of cultivators, increased attention needed, *Dwarkanath Singh* (503).
IMPROVEMENT OF HEALTH CONDITIONS:
Difficulties in connection with, *Khaparde* (406).
Suggestions for, *Pandeya* (127); *Irwin* (346); *Khaparde* (406); *Dwarkanath Singh* (503); *Pande* (536).
Improvement of hygienic conditions necessary (*Plymen* (35).
Indian attitude *re* cleanliness of houses, infectious diseases, etc., *Pande* (538), 33,343-7.
improved Lay-out and sanitary conditions of villages, scope for, *Plymen* (32).
Model villages, scheme, *Khaparde* (406); *Sahasrabudhe* (454), (458).
Panchayat Committees, proposal, *Khaparde* (408).
Physical condition of people in different districts, *Irwin* 31,357-61; *Pande* 33,473-5.
Salvation Army institutions, question as to existence of, *Stiles Webb* 32,122.
Social Service League, establishment of institutions on lines of, proposal, *Dokras* (485), 32,670-3.

Welfare of Rural Population—*contd.*

STANDARD OF LIVING:
Improving slowly, *Powar* 28,432.
Increase, *Pochory* 33,166-9.
Suggestions for improvement, *Brahma* (250), 30,162; *Irwin* (346), 31,226-35, 31,362-8.
Weakness of agriculturists physically and mentally, *Stiles Webb* 31,903.

Wells, *see under* **Irrigation.**

Wheat, *see under* **Crops.**

Wild animals:
Damage to crops by, *see under* **Crops.**
Tigers and panthers, people keen on killing in spite of reduction of rewards, *Irwin* 31,083-4.

WILSON, C. W., M.R.C.V.S., I.V.S., Veterinary Adviser to Government, Central Provinces. (332-3), 30,908-31,052.

Training and past appointments, 30,914-5.
ANIMAL HUSBANDRY.
Bad condition of cattle, 30,954.
Bulls, castration:
Difficulty with castes accustomed to carry out work, 31,029-30.
Progress, 31,027.
Control by Civil Veterinary Department rather than Agricultural Department desirable, but not suitable in Central Provinces, 30,929-36, 31,031-8.
Gaurakshans, 31,013-8.
Hissar cattle farm, 31,009-11.

EDUCATION
Nagpur Agricultural College, veterinary lectures and first aid demonstrations, 30,913, 30,920, 31,006-8.
Veterinary Studies, Board of, need for, 30,913.

VETERINARY
Assistants.
few Complaints received of, 30,959.
Pay, 30,958.
Board of Veterinary Studies, need for, 30,913.
College, desirable, 30,918-9, 31,039-46.
Contagious Diseases:
Foot-and-mouth disease, treatment, 31,003-4.
Legislation for destruction, segregation and control of movement impossible owing to religious scruples of the Hindus, (333).
Methods of dealing with, education and teaching of animal hygiene in elementary schools, (333).
Nature of, 30,985-7.
Obstacles met with in dealing with, religious scruples of the Hindus (333).
Reporting of:
by *Patwaris*, system and delay, 30,989-91.
Post cards for, improvement from, 30,989.
Rinderpest:
Immunisation against, question of cost, and percentage of cattle worth, 31,047-52.
Incidence and mortality from, 30,971-4.
Periodicity in outbreaks, 31,001-2.
Staff dealing with, should be under sole control of veterinary officer in charge of province, 30,909-12.
Troubles from borders, 30,975-9.
little Co-ordination between work of provinces and Indian States, 30,909.
Department:
Independent of Director of Agriculture, continuance advocated, (332).
Relations with Agricultural Department, 30,913, 30,955.

WILSON, C. W.—*contd.*
VETERINARY—*contd.*
Dispensaries:
Assistants, work satisfactory, 30,956.
Classes of, and control, (332).
Expansion inadequate, (332).
Local Fund, more interest should be taken in by local board members, (332).
Touring:
Importance of work, (333).
Used largely by malguzars but not fully by cultivators, (333).
Transfer of control to Provincial authorities should only be partial, (332).
Use of:
Inadequate, (332).
Increase should be encouraged by propaganda and demonstrations and suggestions for, (333).
Education, demand for, 31,005.
Non-contagious diseases:
Cases treated, number of, in 1901-4 and 1920-25, 30,998
Treatment, 30,988.
Preventive inoculation:
tremendous Demand for, 30,945
Number of cases in 1901-1905 and 1920-25, 30,995
Obstacles to popularisation of, (333), 30,996
Simultaneous, desirable and under consideration but increase of staff necessitated, 30,946-52.
no Private practitioners, 31,000
Public health aspect of work, 30,913, 30,937-9.
Research
Further facilities necessary, (333), 30,921-8.
Laboratory should be housed near public health research laboratory, 30,913, 30,981-4.
Laboratory staff attached at Nagpur, 30,992-3.
Muktesar Imperial Laboratory and branch at Bareilly, work of, etc, (332).
Piroplasmosis the most important need, 30,994.
Provincial Veterinary Research Institution, setting up of, scheme (333), 30,913, 30,921-8, 30,980, 30,999.
Serum:
Making of, in provincial institute not advocated, 30,940-4.
Supply of, and suggestions for facilitating, (333).
Staff.
Expansion scheme, 30,964-70.
Particulars *re*, 20,916-7, 30,960-3
Recruitment from outside province owing to lack of training facilities and drawback of, 30,918, 31,019-26, 31,039-46
Training at Madras, found most satisfactory, 31,022-5
Superior Veterinary Officer with Government of India.
Appointment advocated, (333), 30,909.
proposed Functions, (333), 30,909

WITT, D. O., Chief Conservator of Forests, Central Provinces (271-728), 30,170-30,429, (295).

AGRICULTURAL INDUSTRIES:
Lac industry, particulars *re*, (275), 30,216-25, 30,272, 30,323-5, 30,368-9, 30,379.
Sericulture in forests, position, 30,226-31, 30,368-9.

ANIMAL HUSBANDRY:
Camels, province not suitable for, 30,404-7.
Fodder:
no Scarcity except in Berar, (278).
Stall feeding, question of extension, 30,363-4.
Grazing, *see under* Forests.

WITT, D. O.—*contd.*

EDUCATION, Forest school, Balaghat, 30,346-7.

FERTILISERS, cowdung, attempts to induce use of fuel instead of, in *Chhattisgarh* district, (278).

FORESTS :

Afforestation, not needed in Central Provinces (278).

Area and reduction in, for cultivation, 1906-07, 1916-17 and 1925-26, (277).

Areas available for cultivation, (276).

Baled grass.

Cost of baling, 30,356-7.

Distribution, method, 30,358-60

Quality, 30,355.

Storage possibilities, 30,177-83, 30,290-5

Supply for stall feeding, experiments and absence of demand for, (273-4), 30,174-6, 30,260-8.

no Casuarina, 30,423-5.

Construction and repair of wells, tanks and anicuts, (276).

Cowdung, collection by people, 30,275-9.

Cutting and preserving fodder on large scale, Forest Department should carry out, but increased staff would be necessary, 30,173.

Department

Contact with Revenue Department, 30,331-2, 30,349.

Relations with Agricultural Department, 30,211-2, 30,349.

Deterioration :

Causes, (278)

Floods in Central Provinces not due to (278)

no definite Investigation being carried on, 30,354.

will not be Serious if grazing not largely extended, 30,354.

Ensilage making never tried, 30,296

Extraction of minor forest produce and system of working, (275), 30,272, 30,319-26, 30,368-9, 30,377-80

Felling of trees within 20 yards of either bank of streams in certain areas forbidden, (278), 30,371-2

Forest Engineer, question as to scope for, 30,381-3, 30,408.

Fuel

Cost, question of possibility of reducing cost, 30,365-7.

Increase of areas of *babul bans* desirable as means of increasing supply, but tendency rather to reduce, (278), 30,282-9, 30,330, 30,401-3, 30,421-2

Karanja trees not very suitable, 30,420

no Scarcity except in Berar, (278)

Fuel and other produce, methods for supply of, to cultivators, and failure of certain experiment, Nistar and Paidawar, (275), 30,185-95, 30,232-6, 30,319

Grass :

Quality of, 30,300.

some Research carried out, but not by Department, 30,350-3.

Sale of fodder and thatching grass from closed coupes, (274), 30,297, 30,342.

Use for stall feeding, Nimar district, (278).

Grazing :

Average annual value of concessions in Central Provinces, (278).

Buffalo, more damage done by, than by bullocks, 30,309-11.

Dear grazing and cheap fodder :

Effect of cheap fodder policy on keeping of useless cattle, possible danger, 30,312-4

Policy advocated, (277-8), 30,244-52, 30,417.

Excessive, remedies for, in Central Provinces, (277), (278).

Facilities, (277), 30,342-4.

Goats and sheep, restrictions, 30,199.

Number of cattle grazing in Central Provinces and revenue realised, 1922-23, 1923-24, 1924-25, (272-3).

Policy, 30,302-11, 30,317.

WITT, D. O.—*contd.*
FORESTS—*contd.*
Grazing—*contd.*
Rates·
Fixation of, (272), 30,241-3, 30,318, 30,361.
Reduction, undesirability of, 30,196-8.
Restriction, (273)
Settlements in certain tracts and need for extension, (278).
Statistics of cattle grazed and rates paid for year 1924-25, 30,413-6, (295).
Industries
Development possible as result of research work being done at Dehra Dun, 30,377.
Utilisation officer to be appointed for a few months, 30,378.
Labour, system, 30,202-7, 30,333-9.
Lac propagation and cultivation, and Government policy, (275), 30,216-25, 30,272, 30,323-5, 30,368-9, 30,379.
Light railway, 30,254-7, 30,315-6.
Match factory, question as to prospects of supply of timber for, 30,393-400.
Myrobalams, revenue from, 30,386-92, 30,427.
Natural generation, 30,259
Relation of forestry to agriculture, (271-2), (276), 30,213-5.
Revenue made by, and freer, and to spend money on useful projects desired, 30,237-40, 30,258.
Roads
Construction, particulars *re*, expenditure on, etc., (276).
Nature of, 30,408
Use of, by general public, (276), 30,340-1.
Sericulture, position, 30,226-31, 30,368-9.
Shifting cultivation, negligible, 30,172, 30,334.
Sleepers, supply, 30,254-7, 30,269-71.
Slopes, working of, 30,409-12.
Soil erosion, in Central Provinces, not serious, (278), 30,374.
Staff, forest guards, foresters and rangers, training and pay, 30,345-8.
Tanning materials, 30,426-8.
no Tea cultivation, 30,280-1.
Tiger population, 30,327-9.
Trees, commercial, 30,253.
Villages, system and cultivation in, 30,208-10, 30,333-9.
Working, methods of, and preparation of working plans, (271-2).

GLOSSARY.

ACHAR	Fodder (leaves, pods, shoots) obtained from the *babul* tree (*acacia arabica*).
ADAT	Brokerage, commission.
ADHIA	Division of produce between two parties in equal proportions
ADTYA (ADATYA, ADATIYA.)	An agent or broker.
AKOLA (hoe)	A tined intercultivating implement
ANNA	One sixteenth of a rupee, equivalent to 1½d. at exchange rate of one and sixpence to the rupee
ATTA	Wheat flour.
BABUL	A widely distributed small tree (*acacia arabica*)
BAKHAR (BAKKHAR, VAKHAR).	A blade harrow used as a substitute for the plough and also for preparing the seed bed
BALAJEE	Lit name of a diety. A religious cess.
BALUTA	A village servant
BAN	A wood, grove
BANDI	A field of grain which has failed to mature
BANDHI	A rice field
BANIA	A Hindu trader who is generally also a money lender.
BANJARA	A tribe of itinerant grain and cattle merchants.
BARANI	Unirrigated land depending on rain for its water supply.
BAREE	A caste of vegetable gardeners
BARHI	Interest in kind upon seed-grain
BASTI	A village, any inhabited place
BATAI	Payment of rent in kind, by division of produce between landlord and tenant.
BERA	An inclosure
BERSEEM	Egyptian clover (*trifolium alexandrinum*).
BHATA	Light, red, laterite soil
BHUSA	The husk or chaff of grain, the straw.
BIASI	Cross-ploughing of rice land after the crop has come up.
BIDI	Country-made cigarette.
BIGHA	A measure of land, the standard or *pucca bigha* is 3,025 square yards, or $\frac{5}{8}$th of an acre.
BIR	An area reserved for the growing of grass
BOJA	A bag of unpressed cotton, weighing 392 lbs.
BUND	A dam, a field embankment.
BURAD	The name of a Hindu caste whose main occupation is mat-making.
BURI	A variety of cotton imported from America (*gossypium hirsutum*)
CASSAVA	Tapioca (*manihot utilissima*).
CHAK	A block or portion of land
CHAKBANDI	Consolidation (of holdings).
CHAMAR	A worker in skins. One of the depressed castes.
CHARAS	The narcotic resinous exudation of the hemp plant, (*cannabis sativa*).
CHARKA (CHAKRA)	Spinning wheel
CHAUKI	A post where a watch or guard is stationed.
CHAUKIDAR	A watchman.
CHAWADI	A shelter house for travellers.
CHOLIKHAN	Cloth from which the bodice worn by females is made.
CHUNI	Coarsely ground pulse.
CRORE	Ten millions.

DAK (bungalow) . A rest house for travellers.
DAL . .. ... A generic term applied to various pulses.
DALAL ... An agent or broker.
DAMDOPAT An ancient Hindu provision by which the total interest on a loan may not exceed the amount of the principal.
DAWAKHANA A dispensary.
DAWRA .. .. An intercultivating implement.
DERHI . 1½ times, interest at the rate of 50 per cent.
DESHI ... . Native to the country, indigenous.
DHAINCHA . . A leguminous fibre plant often grown for green manuring (*sesbania aculeata*).
DHAN .. . The rice plant, unhusked rice
DHANA Grain in general.
DHARMADA . A contribution for charitable purposes.
DHIMAR A caste of fishermen
DHORNE A cess devoted to cattle protection

ERANDI . . Castor seed (*ricinus communis*)

FALTU . . Extra, unnecessary.

GANJ A market
GANJA . A narcotic derived from the unfertilized flowers of *cannabis sativa*.
GAOLO . *See* GOWALA
GAURAKSHAN A refuge home for cattle.
GHI . Clarified butter.
GOND . An aboriginal hill tribe inhabiting the eastern branches of the Vindhya mountains
GOSHALA . Charity devoted to cow protection.
GOWALA (GAOLO, GWARI, GOWLI) A herdsman or milkman
GRAM Cluck pea (*cicer arietinum*)
GUAVA . A small evergreen tree (*psidium guyava*) grown solely for its fruit
GUR . Unrefined Indian sugar, jaggery.
GWARI . . . *See* GOWALA

HAISSYAT A statement of assets and liabilities.
HAKIM A practitioner of one of the Indian systems of medicine.
HAMALI Porterage charges.
HANGAM Time, season.
HARRA .. . . The black myrobalan (*terminalia chebula*)
HAQ .. . . A privilege, perquisite, right.

JAMADAR . . An official in the Agricultural Department subordinate to the Agricultural Assistant
JARI . A mixture of varieties of cotton belonging principally to the *gossypium neglectum* group.
JAT (plough) A light inversion plough
JUAR (JOWAR) . ... The large millet (*sorghum vulgare*).

KABULI An agreement.
KALAR' .. Saline efflorescence.
KAMDAR Fieldman, the lowest grade of official in the Agricultural Department.
KANS . A coarse, deep-rooted grass weed (*saccharum spontaneum*).
KAPAS ... Cotton with the seed still adhering, (unginned).
KARANJA An evergreen jungle tree (*pongamia glabra*).
KARBI (KADBI) . Straw of *juar* (millet)
KARGA .. Wild rice.
KAYASTH A caste whose main occupation is that of writer or accountant.
KHADI RUMAL .. A handkerchief (*rumal*), the fabric of which (*khadi*) is made from homespun yarn.

KHALSA .. ... Lands or villages held immediately of Government.
KHANDI .. .. A measure of weight and capacity which varies according to the commodity and, in many cases, for the same commodity in different localities; for cotton, 784 lb.; at page 115, 180 lb., a common grain measure is 200 seers or 411·4 lb. nominal weight
KHAR .. . A block of land, the soil of which is more or less homogeneous.
KHARI ... . . A hardy variety of sugarcane popularised by the Agricultural Department.
KHARIF .. The autumn harvest; crops sown at the beginning of the rains and reaped in October-December.
KHATA . . An account
KHUDKASHT From *khud* (self) and *kasht* (cultivation), land cultivated by the proprietor, i.e., part of the home farm. (Any person who is allowed to cultivate it can acquire occupancy rights)
KISAN . . A cultivator
KORKU . An aboriginal hill tribe
KOTWAL A police officer
KUNBI An agricultural caste
KURO (KURU) A grain measure equivalent to 10 *seers*.
KUSUM(B) A forest tree (*schleichera trijuga*).
KUTCHA ... Inferior or bad [lit. "not solid"]

LAKH . One hundred thousand.
LAKHABHATA Signifies the system of fragmented holdings, an ancient device, now obsolete, whereby the fields of a village were subject to periodical re-distribution, so as to ensure that each cultivator had a fair share of the different qualities of land
LAKHORI . The chickling vetch (*lathyrus sativus*).
LUGDA . . A strip of cloth worn as a petticoat

MACHOWA . The practice of sowing artificially germinated seed.
MAHAJAN . . Merchant, creditor
MAHAL. A district or province
MAHAR . A low caste, generally village servants
MALEE (MALI) . A gardener
MALGUZAR . Lit revenue payer. A term applied to a proprietor or co-sharer in a village held in ordinary proprietary tenure
MALIK MAKBUSA . *Malik*, owner, proprietor; *makbuza*, occupied. A cultivator possessing a hereditary or proprietary right in the land he cultivates
MANGO An evergreen fruit tree (*mangifera indica*).
MARWARI (MARWADI) A banker, broker, merchant
MASUR . . .. Lentil (*lens esculenta*)
MAUND . . . . A weight of 82·28 lb. (*pucca maund*). Has different values for different commodities and for the same commodity in different localities
MEGASS . Residue of sugarcane after the juice has been expressed.
MEHRA . A low caste, generally village servants.
MESTON, M.S N. (plough) A very light type of inversion plough.
MILKAYAT SIRKAR . Lit. Government property, plots of land of which the proprietor is the Government.
MOHARRIR (MUHAR) A clerk or writer.
MOHWA . . A deciduous forest tree (*bassia latifolia*) whose dried flowers are eaten as food or distilled into liquor.
MOTE ... . A receptacle for hoisting water from a well.
MUNG ... . Green gram (*phaseolus radiatus*).
MURUM . . .. Light stony soil.
MUSHAN . ... A grass (*tseilma laxum*).
MYROBALAN ... ... Tanning fruit obtained from trees of the genus *Terminalia*.

NAHAN (mill) . .. A 3-roller iron cane mill manufactured by the Nahan Co., Ambala.
NAKA .. . A toll or custom station, a subordinate police-station.
NISTAR . . Release, acquittal.
NEWAR . . A coarse cotton tape.
NULLAH . .. A water course.

PADDY . . . Rice (*oryza sativa*).
PAHADI . Belonging to a hill tribe.
PAIDAWAR . Pertaining to produce, outturn
PAILI . A grain measure, nominal weight in Nagpur is $1\frac{1}{4}$ *seer*.
PALAS . . A moderate-sized deciduous tree (*butea frondosa*).
PALLA . . Equivalent to three *maunds* or 120 *seers*
PANCHAYAT (PANCHA) List a committee of five. Used to describe an association of any number of persons, instituted for objects of an administrative or judicial nature.
PATEL . The headman of a *ryotwari* village.
PATKA A silken girdle or sash.
PATWARI A village accountant or registrar.
PIE One-twelfth of an anna
PINJRAPOLE A refuge home for cattle
PONIA A grass (*tschoemum sulcatum*)
PUCCA Of good quality, up to standard, correct, substantial.
PURDAH A veil, screen, the practice of keeping women secluded.

RABI . The spring harvest; crops sown in autumn and reaped at the end of the cold weather.
ROSEUM . A coarse, short staple cotton (*gossypium neglectem roseum*).
RYOT .. A cultivator
RYOTWARI . A system of tenure under which the cultivator pays the revenue direct to Government

SABUL . An iron bar, *sabul* plough, a bar-pointed, inversion plough.
SALAI A gum tree (*brassica serrata*)
SANAD . A charter, a certificate of honour.
SANN (SUNN) Bombay hemp, a leguminous fibre crop (*crotalaria juncea*), also used as a green manure.
SARBARAI . Supply, means of providing for charges or expenses.
SARI A long cloth worn by Indian women.
SATNAMI A reformed sect of *Chamars*.
SATTA . Traffic, exchange of money.
SAWAI An excess of one-fourth, interest at the rate of 25 per cent.
SEER . A weight (2·057 lb.).
SEMAL . A large deciduous tree (*bombax malabaricum*).
SESAMUM . An oil seed (*til*) (*sesamum indicum*).
SHASTRA . A scripture, a work of authority, especially one attributed to an inspired writer.
SHIKAR Hunting; *shikari*, a hunter.
SORGHUM . .. A genus of grasses, the most important of which is *juar*, the great millet (*sorghum vulgare*).
SOWCAR (SOWKAR, SAHUKAR). A money lender.
SIHAR ... .. A light sandy soil.
SIR .. . Home-farm land; the personal, family or private holding of a proprietor or co-sharer.
SIRKAR .. ... The Government; the supreme authority.
SIRPANCH .. The chief of the *panch* (see *panchayat*).
SURKI (SARKI) . Cotton seed.
TACCAVI . . An advance made by Government to cultivators for agricultural purposes.
TAHSIL... . ... A local revenue division of a district.

TAHSILDAR ... A revenue officer in charge of a *tahsil*.
TALOOP . .. A parasitic flowering plant (*striga lutea*).
TALUQ ... ... See *Tahsil*.
TALUQDAR . ... A big landowner.
TAMASHA ... A show, spectacle.
TARWA .. . .. A shrub (*cassia auriculata*).
TENDU . . A small tree (*diospyros tomentosa*).
TEORA . . Rape (*brassica campestris*).
TIL (TILLI) ... An oilseed (*sesamum indicum*).
TOLA . . The weight of a silver rupee, 80 *tolas* equal one *seer*.
TONGA . . A horse or bullock carriage.
TUR .. . .. Pigeon pea (*cajanus indicus*).

URID ... . .. A pulse (*phaseolus mungo*).

VADI ... . . An enclosed space.
VAIDAYA . A practitioner of one of the Indian systems of medicine.
VAKHAR . See *Bakkhar*.

(62797) Wt. P622—636/320 2000 7/27 H. St. G. 71