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Whither Agriculture in India?

(A Study of the Re-organisation of Agricultural Planning in India)

By

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PREFACE.

In any scheme of post-war economic development of the country, settlement must be made of the many different issues of agricultural economy. I undertook the present study not with a view to present any plan, which may achieve any formal completenes, or advocate any particular policy, but to make a comprehensive and concise survey of those essential issues. It, however, provides the ingredients, which may be helpful in forming a scientific plan for rationalisation of small-scale farming in the country. The account and analysis set forth here, of the present economic situation and opportunities in the country, which has forced us to do a great deal of hard and untrammelled thinking, puts the fundamental facts so clearly as to leave no excuse for an intelligent reader for not being able to make his own judgment about them. It is possible that one may not agree with my conclusions, but that does not render my account incorrect.

It has been unavoidable in such an investigation as this to deal with immediate practical issues and plans, the shape of which is changing almost every moment. Since the book has been a long time in the writing and its main text was finished several months back, my remarks about our particular post-war economic arrangements are subject to a great limitation.

It is now an indisputable fact that while the pace of our industrial development must be quickened, the teeming millions of the country have little chance to improve their lot without almost a revolution in the technique of agricultural production and the system of land tenures. I must also set forth in the forefront of my arguments that while planning for production we must lay proper emphasis on the problems of distribution. In other words the determination of proper values of the different factors of production and of the commodities produced should no longer be postponed. Price-control, instead of being relaxed in the post-war period should be made more comprehensive and refined to work out and stabilize a proper *price-parity*.

I wish to admit my indebtedness to the sources, wherefrom I have borrowed profusely the material for this thesis. These are so numerous that it is not practicable to express thanks individually to all of them here. But the debt, which I owe to Dr. Radha Kamal Mukerjee is of a different nature and is the largest of all. It is under his guidance that I have completed this investigation and but for whose encouragement and constant help it couldn't possibly be finished. But it would never have been even begun without the kindly insistence of my wife, who also went through the ardours of proof-reading and compiling the index so cheerfully that I cannot but admire her. I however imagine to have taken her supplies under 'lend-lease' arrangements for who knows the 'big-powers' may after all cancel these obligations. As for my pioneer publisher, I wonder, if they need my thanks.

BALJIT SINGH.

Simla, June 1945.

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CHAPTER 1.

Transition of Indian Agriculture.

A. The Economic Background.

Agriculture is by far the most important industry in India, being the chief source of employment to more than 339 millions of people living in 655,892 villages of the country. It has been the sheet-anchor of the people since the British rule, which has been characterized by a policy of de-industrialisation. Since the establishment of British rule in India, a lop-sided economic development with marked pressure of population on soil, has gone to inflate the percentage of agricultural population to the total population even in recent times from 61 in 1891 to 66 in 1901, 71 in 1911, and 73 in 1941.

Village Communities: Obviously, the village is the home of the agricultural industry, and with an average population of 517 persons (in 1941), it apparently still has a pristine organisation. It contains within its bounds the houses of the farmers, although with no effective link between their scattered fields and individual homes, those of farm labourers, artisans and menials, and those of the money-lender and the village officials *viz.* the headman, the *patwari* and the *chaukidar*—all huddled together in a more or less compact area. The habitat survived well both in form and reality until the Crown Rule in India. Sir Charles Metcalfe in his Minute of 1830, has truly represented its character till then in the following passage:—'The village communities are little republics having nearly everything they want within themselves; and almost independent of foreign relations. They seem to last where nothing else lasts.' Almost a century later, the Royal Commission on Agriculture in India observed the same tenacity and pointed out that, 'the main characteristics of village life are still those of centuries anterior to British rule. Each village tends to be self-contained.' And yet, set aside the superficial elements, even in vital parts the village economy has suffered change especially since the latter half of the nineteenth century.

Sir Charles Metcalfe's village communities of 1830, 'each one forming a separate little State in itself' had lost their independent organisation by the beginning of the present century. The De-

centralization Commission in 1909 reported: 'The Indian villages formerly possessed a large degree of local autonomy,.....This local autonomy has now disappeared owing to the establishment of local civil and criminal courts, the present revenue and police organization, and the operation of the individual *rayatwari* system which is extending even in Northern India.' The loss of the self-Government by the village marks a turning-point in the history of Indian agriculture. The communal organization and land-tenures of the village yielded to individualism and individual rights in land with a consequent deterioration in agricultural efficiency. There has come about with the creation of private proprietary rights in land, an acute land parcellment and fragmentation, sub-infeudation and rack-renting, and a gradual usurpation of the village 'common' by individuals. This last has very adversely affected the cattle and manurial economy causing a serious set-back to both farming and animal husbandry.

The rural economy of pre-British India, was built largely on the isolation and economic self-sufficiency of the villages. A village produced little for the market, and in spite of a flourishing foreign trade there were no important exports of agricultural produce. Subsistence farming, together with the keeping of a few milch cattle on each holding, was therefore the rule, and, in the absence of any marked development of irrigation facilities, it usually implied the growing of single crops best suited to the land and the climatic conditions in each region. There are reasons to believe that though each individual farmer had more or less contiguous fields, these were commonly dispersed over different soil blocks in a village, mainly because subsistence farming necessitated the growing of a variety of crops by each cultivator and dispersion was a good means of safeguarding against rainfall failures. The revenue demand was fixed as a share of crop-produce and collected by the village *panchayat* from each individual holding. It was this pool which met the requirements of the urban people, but the individual cultivator had little to do with its marketing. Price economy as a matter of fact was no part of agricultural economy till the first half of the nineteenth century. The State, the farm-labourers, the village artisans and menials, the 'pundits' and 'mullahs', all had their definite shares or fixed quantities out of the produce on each holding.

shoes, oil, sweets, salt etc. Some of the producers' goods have also to be purchased with money. Money has become the pivot of village economic life, though not to the same extent as in the industrial towns. The disintegration of the village community and the introduction of price economy based on money has in course of time weakened the force of custom as a regulator of economic values. The forces of demand and supply with competition in the background now tend to dominate the economic organization of the village. This change to competitive economy has already brought about rackrents for the tenants, usury for the borrowers, and uneconomic prices for the agricultural products.

To sum up, the characteristic features of the Indian agricultural economy to-day are:—

1. *Over-crowding*:—In general, agricultural prosperity tends to vary inversely with the number of agricultural workers. The country has about eighty workers per 100 acres of cultivated area, who, in spite of the methods of cultivation being old, traditional, and laborious, remain under-employed and have practically little or no work from four to six months in the year. The period of enforced idleness is however intermittent, and farming has adapted itself so much to the supply of manual labour that not only is there little application of capital but the individual cultivators have at times to engage excess hired or bartered labour, particularly at sowing and harvesting seasons. Under such disproportionate application of labour units, there is no escape from poverty. The United Kingdom has been maintaining its cultivation at a relatively much higher standard with less than 6 persons per 100 acres of farm land whereas mechanization in most parts of the New World has reduced the ratio of workers still further. In Eastern Europe where the number of such workers is only more than 15, it is held that removal of some of the people would enable those remaining behind to improve their well-being without any change in farming technique.[1] The argument applies with greater force to conditions in our country. We have to meet the menace of land shortage by finding a suitable outlet without which we shall ever be prevented from raising more produce or getting better agricultural incomes. Agriculture today is suffering from the weight of its workers.

1. Food and Farming in Post-War Europe by Yates and Warriner p. 38.

2. *Staple-farming*—The small-scale farming has invariably been associated with the cultivation of grains primarily for subsistence with a little surplus for the market. Cotton, sugarcane and jute are the only crops, other than grains and oil-seeds, of any importance to the average cultivator in India. These are by no means evenly distributed but are highly localized, nor is their cultivation from an economic point of view much different from that of grains and seeds. Tea, coffee and rubber are grown by the planters as distinct from the Indian farmers. Special types of farming such as market gardening and dairying have not yet assumed any importance in the agricultural economy of the country. This is lamentable because staple farming is utterly inappropriate for crowded regions as it gives far lower returns than specialized or mixed farming. It has been estimated that on average holdings of less than 2 acres in a village near Benares, the profits are Rs. 175 per *bigha* for a lemon orchard, Rs. 80 per *bigha* for a field of roses or potatoes, Rs. 60 per *bigha* for a field of brinjal or of *falsa* and only Rs. 12 per *bigha* for wheat.[1] Dairying and poultry-keeping are equally remunerative types of mixed farming. The country is already in for urbanization on a big scale, as the increase in the number of cities with a hundred thousand inhabitants or more from 35 in 1931 to 58 in 1941 indicates. With developments in irrigation and transport facilities agricultural prosperity will certainly be promoted by the increasing adoption of special types of farming. It should however not be forgotten that progress in the direction of intensive farming is dependent on the growth of large industrial agglomerations, and as such is inevitably limited by the speed of the industrial progress in the country. Moreover, we can not think of a rapid transition, even if, practicable, from grains to fruits, butter and milk, since in spite of almost wholesale staple farming we are still short of bread.

3. *Limping cultivation.*—The Indian system of farming is by no means intensive as the average out-turn per acre is very low, nor can it rightly be described as extensive, since it already suffers from an over-investment of labour units. It may better be called as limping with too many of labour-units and too little of capital, so that cultivation implies usually the growing of single crops only, under methods which give but poor yields per acre. For British India the average yield per acre is only 939 lbs. for rice, 774 lbs. for wheat, 872 lbs. for barley, 575 lbs. for *jowar*, 429 lbs. for *bajra*,

1. Report of the U. P. Banking Inquiry Committee Vol. 1. p. 242.

939 lbs. for maize, 657 lbs. for peas, 345 lbs. for linseed, 3,161 lbs. for sugarcane (*gur*) and 127 lbs. for cotton. These are amongst the world's lowest comparable figures and are capable of considerable improvement provided equilibrium in the ratio of the various units of production applied in cultivation is restored. Capitalisation on a large scale is needed to give agriculture a balanced footing so that it may advance on the highway to prosperity.

4. *Precarious Living*—The physical environment has still ascendancy over man in cultivation, and the person behind the plough in India has as yet little control over production, which is largely determined by a capricious monsoon. The area which is served by the great irrigation works enjoys relative security, but about four-fifths of the cultivated area has no such facilities and a lock-out in agriculture is inevitable whenever the rains fail. This may mean anything from ordinary scarcity to actual famine. Even in areas where canal irrigation supplemented by tube-well irrigation has developed highly, such as in the Upper Ganges Jamuna Doab, a deficiency of rainfall does not register its effects less violently on the net cropped area although artificial water supply lends a greater security to the outturn of the crops.[1] And yet rainfall here is so irrigular that out of 35 years sixteen have been of deficient rainfall, and six have suffered from extreme scarcity. In a study of rainfall records, Dr. Radha Kamal Mukerjee has observed that every sun spot minimum each year is accompanied by a serious drought, while other droughts have closely followed the sun spot maxima. Conditions elsewhere are even worse. For Bengal it is said that it is only once in ten years that there is normal and well distributed rainfall and natural calamities occur almost every year in some part or the other.[2] In the Punjab, leaving aside the canal colonies, agricultural production depends to a very great extent on the amount and distribution of rainfall, which is so capricious that in the Hissar district about 40 per cent of all crops sown since 1920 have failed to mature[3], whereas the study of a decade 1925-26 to 1934-35 revealed an average failure of 37 per cent. of the sown area each year in the Gurgaon district.[4] South India presents no better picture, and, according to Dr. Mann, uneven distribution of rainfall is one of

1. The Land of the Two Rivers by Baljit Singh (1940).
2. The Man Behind the Plough (1939) by M. Azizul Haque.
3. An Economic Survey of Jamalpur Sheikhan.
4. An Economic Survey of Bhadas.

the dominant features in the Bombay Presidency which upsets a good many calculations and renders agriculture an uneconomic industry.[1] Agricultural progress lies not only in the direction of extending irrigation facilities but equally in the application of scientific research to all branches of agricultural production to tame and master Nature.

5. *Defective organisation.*—Agriculture in India is in the hands of millions of small men, who have neither any education to grasp or even the wish to grasp a modicum of the new technique, nor sufficient means at their command to carry on production with proficiency. The individual cultivator is too ill equipped and too poor to be an organizer of a progressive industry. He has been burdened with too many middlemen, who render no economic services but pull him down by the pressure of their weight. These pestilent blocks of humanity consist of the *rentiers*, the *zemindars*, the *patnidars* and *thekedars*, and the *ryots* with the right to sublet—the money-lenders, and the middlemen in the marketing of agricultural produce. They have been allowed to thrive as necessary evils so far, but early recognition is inevitable of the fact that their removal is one of the most urgent necessities of the industry. Even then the present organization of the industry by individuals lacking all capital would continue to remain impervious to all improvements and national requirements. Individualistic cultivation of the capital-less but over-numbered farmers means tiny holdings, unresponsive on account of their very size either to the price or population pressure, consisting of widely scattered pocket-handkerchief strips that can in no way admit modern implements or methods which lead to a high standard of arable cultivation at comparatively low cost. The right type of efficiency can be secured even by such over-crowded and poverty-stricken farmers by introducing a proper form of combination in the structural organisation of their industry, which may mean anything from co-operative to collective farming, and do away effectively with the curse of parcellment and lack of capital.

6. *Deficit Economy.*—At present cultivation in India, because of the combination of a number of factors, the most important of which have been examined above, suffers from a deficit economy in the sense that it fails to remunerate fully the persons engaged in

1. 'The Farmer by Dr. M. G. Bhagat'.

it and at the same time yields a very low net output per acre. Let us consider a few estimates: Dr. V. K. R. V. Rao estimated a *per capita* income of Rs. 51 per year for the rural population of British India in 1931-32 as against Rs. 166 for the urban population. For 1938-39 the respective estimates are Rs. 47 and Rs. 200 whereas the figures for 1942-43 are Rs. 91 and Rs. 483.[1] Taking particular areas we find the pre-war income of a unit agricultural family in Bengal as Rs. 170 per year, and (even when we assume a normal crop disposed of at the highest prices) it comes to Rs. 276, while the barest minimum expenses are Rs. 293 and may be even Rs. 319.[2] Dr. Bhagat has calculated for Bhiwandi Taluka in Bombay for the year 1937-38 a *per capita* agricultural income of Rs. 57-4-0, whereas in Borsad Taluka 10 per cent. of the cultivators get a negative net income while 45 per cent. of the families earn less than Rs. 100 and only 13 per cent. make more than Rs 300. Likewise in the United Provinces, my own calculations show that the average income per agricultural worker has fallen from Rs. 84 in 1928-29 to Rs. 50 in 1934-35. In a survey of a typical village in the Punjab it was found that of the five families whose incomes and expenses were recorded in detail, four had deficits in spite of very low standards of living and the fifth had a small surplus of Rs. 17-5-0.[3] Agricultural production has to be multiplied many times before chronic agricultural indebtedness can be escaped and a reasonable standard of living assured to those who are engaged in it. It must be made at least threefold to bring the agricultural population even to the prevailing low level of industrial incomes. It has to be done by increasing the net output per acre, which at present is incredibly low. The average net income per acre varies from Rs. 1-1-0 on holdings below 3 acres to Rs. 8-10-0 on holdings over 20 acres in the United Provinces, the average of all size of holdings being Rs. 2-15-0.[4] The farm accounts published by the Board of Economic Inquiry, Punjab, show on the tenant's holdings for the year 1938-39 an average net income per acre of Rs. 10·45 in the canal colonies and Rs. 2-19-0 on the unirrigated areas. As against this the net out put per acre for 1937 in Europe ranged from £12 to £15 in Belgium, Netherlands, and Switzerland, £9 to £12 in Denmark and £6 to £9 in Germany,

1. 'Commerce:' 18th December 1943.
2. 'The Man Behind the Plough by M. Azizul Haque:' P. 117.
3. An Economic Survey of Jamalpur Sheikhan in Hissar district by the Board of Economic Inquiry, Punjab for 1935-36.
4. Economic Problems of Modern India by Dr, R. K, Mukerjee: p. 112.

France and the United Kingdom.[1] The lowest was obtained in Rumania, Yugoslavia and Albania, but even there it was a little less than £ 3 or Rs. 40. The net output from agriculture per worker is obviously high at over £ 120 or Rs.1,600 in the United Kingdom and Denmark.

7. *Absence of planning and control*—The State in India has done practically little to modify or control the economic factors at work. Consequently, a number of disharmonies and mal-adjustments have arisen. Overcrowding has increased without appreciably effecting the margins of either extensive or intensive cultivation in spite of a great scope in both the directions, an acute problem of shortages has arisen in spite of surpluses in certain directions, and there is a significant disparity between prices and production between prices and costs, and between farm and industrial prices. The task of reorganising farming shall imply controls a of very comprehensive nature so that the environment, both physical and economic, may be mastered. It is such transition to planned economy that alone can bring relief and prosperity in the post-war period.

B. The Social Background.

Economic life in India has been subjected to rigid institutional controls of the tribe, the caste, the village community and the joint family, which welded together into one the social and economic structure. This socio-economic stratification has largely been built round the tribe and the caste and sometimes round and indigenous guild, which represented the economic union of a functional group and thus the social, economic, and domestic life of an individual in India has not been free. His occupation, even earnings and standard of living have been dominated by institutional control. The caste above all has been dominating the individual from times immemorial. But, as Sir S. Radhakrishnan observes:—'The system of caste is in reality neither Aryan nor Dravidian but was introduced to meet the needs of the time when the different racial types had to live together in amity. The only way of conserving the culture of a race which ran the great risk of being absorbed by the superstitions of the large numbers of native inhabitants was to pin down rigidly by iron bonds the existing differences of culture and

1. 'Food and Farming in Post-War Europe': *opp. cit.* p. 39.

race. Unfortunately, this device to prevent the social organisation from decay and death ultimately prevented it from growing."[1]

Caste.—Though community of occupation is not the sole basis of the caste system, almost every caste, be it functional, racial or sectarian, is closely associated with a particular occupation. Endogamy and traditional occupation have been the essential characteristics of the caste system, and the first from an economic standpoint simply reinforced the heredity of function. Manu grouped caste into four classes *Varnas, Vratyas, Vrisalas* and *Varn sankaras.* According to Sir Edward Blunt, at present two of the old Varnas have disappeared, the Kshatriya in warfare and the Sudra being broken up into a number of functional castes. He observes further: 'Though many new castes have been formed by fission from older castes, which Manu never knew, yet the caste system is now in all essentials what it was then—a socio-economic system, based on differentiation of function,[2] Each man pinned to his caste had no freedom to choose his occupation, so much so that even to-day India has about four million persons who adopt crime as an hereditary calling.[3] A caste represents an economic organization and hence the transformation of the functional ones into guilds which became endogamous, was achieved with comparative ease. The village artisans had their guilds and castes usually coalescing into one, although at times one craftsman's guild may comprise different castes or one caste may have its members subdivided into different guilds. This implied not only a heredity of function coupled with its advantages of inherited skill and specialization but also the observance of general rules of conduct and social morality, regulation of remuneration and conditions of employment, and above all a system of social security within the economic organization of the village community. A caste is governed by its *panchayat* and fifty years ago its control in professional matters was comprehensive, extending from the fixation of wages and hours of work to control of prices and output, regulation of processes and methods, and protection of its members even through strikes and boycotts.[4] Sir Edward Blunt narrates how until the end of the last century the caste *panchayats* functioned, (1) to regulate the custom

1. Quoted by Jathar and Beri—'Indian Economics.' Vol. I: p. 100.
2. 'Economic Problems of Modern India by Dr. R. K. Mukerjee' : p. 69.
3. 'Haikerwal: Economic and Social Aspects of Crime in India.'
4. 'Hopkins: India Old and New.'

of *jajmani*, (2) to organise resistance to oppression, and (3) to prevent the adoption of an occupation involving social degradation. The *jajmani* consisted of the circle of clients assigned to each worker and was both heritable and transferable and was scrupulously guaranteed by the *panchayat*. There was no scope for unemployment though the riddle of under-employment was left unsolved. Remuneration and conditions of work and employment were also safeguarded by the *panchayat* by the organization of strikes and boycotts against the employees or clients. The traditional occupation was preserved by the ostracism of the offenders, though latter on as occupational apostasy became common the rules were so relaxed as to be applied against those whose changed occupations involved social disgrace. This system of the division of labour based on birth rather than on aptitude, which the Indian caste system enforced, while establishing a non-competitive economy, led to immobility of labour and capital and even resulted in inefficiency entrenched and put at a premium behind the caste walls. S. V. Ketkar has observed: 'The moment you divide your men into watertight compartments on the mere accident of birth, irrespective of their temperament and qualifications, and at the same time refuse them their birthright to develop their natural capacities and faculties to the highest possible limit, you deny your nation all the advantages that otherwise would have added to the store of 'national wealth and well-being.' Besides, the system has created false notions about the dignity of labour with adverse economic consequences. It resulted in a social hierarchy which stood in the way of the material progress of the country and later on led to extreme forms of economic exploitation of the lower castes by the so-called high castes.

By the beginning of the present century the caste had already outlived its utility as far as its economic aspects were concerned. The decline of the cottage industries, and the growth of new urban employments later on in the factory industries resulted in keen competition and confusion. The caste was no longer a means of social security as the *panchayats* could not protect the *jajmani*, when the outsiders poached in; it failed to maintain the level of earnings as competition grew keen; and finally, it has lost its occupational basis as many of the old industries declined and new ones cropped in. The village menials, artisans and servants

today are only as much bound to their occupations as are the workers in a factory. Caste is still one of the determinig factors but no longer the only one. The conditions of demand exercise a more potent influence and although each caste has still a traditional function, it no longer binds its members into exclusive economic grounds. The figures taken out in the United Provinces for 40 castes at the census of 1931 show that there has been a widespread desertion of the traditional functions, particularly among the non-agricultural castes. The 'Chamar', the 'Kewat', and the 'Pasi' are only to the extent of five per cent. in their respective traditional occupation, nearly 80 per cent. having joined the ranks of agricultural labourers. It is obviously due to the decline of their industry, and similar is the story of the 'Ahir' (cattle-breeder), 'Lunia' (saltpetre maker), 'Gujar', (cattle-breeder), 'Bahelia' (hunter), 'Bhat' (bard), and 'Kalwar' (distiller), not more than about ten per cent. of whom are in their caste occupations. The *Julaha* (weaver) has been obliged to leave his traditional occupation to the extent of 55 per cent. nearly 70 per cent. of *Lohars* (blacksmiths) and 60 per cent. of *Barhais* (carpenters) now seek occupation outside their traditional one.

The story of agriculture is quite different. It was never confined to a single caste and was regarded in the village community as a respectable occupation, though not so high that a Brahman or a Rajput may touch a plough. It was however regarded as likely to raise the prestige of the other castes. During the period of economic transition in the latter half of the nineteeth century the other village industries including cattle-breeding suffered, and agriculture became the only important source of employment. Naturally, not only did the agricultural castes remain bound to their traditional occupation but a few more entered its fold. Had the castes regarded agriculture as a degrading profession it might not have been so overcrowded as it is today. The census inquiry referred to above shows that in the 31 non-agricultural castes the percentage of agriculturists was 49, a figure which significantly suggests the loss of the traditional occupation of these castes. In a way the loss of the economic equilibrium of occupations in India has been significant in the history of the caste system, for it has given rise to a continuous process of the desertion of the traditional occupations to land, and of late to new

callings, which offer opportunities of employment. In the face of the economic struggle of the nineteenth century the caste system proved weak; it could however survive as it proved plastic and fluent and it is its responsiveness that safeguards its future. The system of social security which the caste system established is now completely shattered; it still remains to be seen how it is replaced.

Caste still continues to serve as the bedrock of rural life, but like a shipwrecked bottom it is its great danger spot. It no longer confers any of its economic securities or advantages but still stands in the way of mobility, equality, equal opportunities and efficiency. Caste prejudices limit agricultural progress by operating against the adoption of poultry-rearing or use of bone, fish and night-soil as manure. The cultivation of vegetables is the traditional occupation of the market gardening castes, which are lower in the social scale than the agricultural castes cultivating grains. This stands in the way of the development of intensive farming or transition of agriculture from staple cultivation to special types. Even the selling of milk is considered as the traditional occupation of the poverty-stricken members of a caste, and it is this prejudice which puts dairying at a discount. Elimination of the unfit cattle, particularly the cow, still injures caste sentiments, and may in extreme cases result in the ostracism of the member acting on scientific lines. The transition in agriculture [projected in the last section] to a more intensive and special type can be effected only by overcoming or winning over the caste prejudices of our agriculturists.

More than that, caste is still a factor determining rural prosperity. How it operates may be illusrated by following the agricultural progress in one of the topmost districts in the Upper Ganges Jamuna Doab. 'The social institutions of a tribe, the economic and social status of a caste and finally the settlement of a clan, are the dominant factors in determining efficiency and skill, size of a holding and indebtedness, wealth and prosperity. Throughout the district, the thrifty and industrious class of the Jats with their *bhaichara* tenures have achieved marked agricultural progress, and account chiefly for the unique prosperity in the agriculture of the district as a whole. The industry and skill of the Jat, the carelessness and pride of the Rajput, the reckless and dishonest habits of the Gujar, the cunning and lethargy of the Taga, are all too well known and have their own repercussions on the prosperity

of the different tribes. Jats have the most fertile tracts of the district and elsewhere they have usually managed to occupy the more productive soils and make the best of them. The average size of their holdings is the largest in the district, their standard of farming is the highest, and they possess the best farming equipment. Hence their net profits per acre and per holding are greater than those of any other tribe or caste, especially so, as they seldom employ a labourer. Their women assist them in lighter farming operations and do not remain in seclusion. The cloistered lives women lead in such castes as the Tagas, Saiyads, Rajputs, and Brahmans etc. reduce the working capacity of a family and, as these very castes develop imperviousness to ideas about the dignity of labour, agricultural progress is impeded. Consequently, costs of cultivation are high or low according to the customs prevailing in a caste. Agricultural indebtedness is as well associated with ceremonial observances and their performance is at least one of its causes. The peculiar characteristics of every caste have been responsible for the fact that some have more resisting power against adversity whereas others invite it by their own extravagance and social habits. A Chamar has an inferior standard of living, not because he lacks the stamina of a farmer, but because he has to pay the highest rent on the most inferior soil, possessing the smallest average holding among the castes and usually having the least secured rights. Lastly, indebtedness as well as rates of interest are effected by caste. We find a co-relation between caste, size of holding, amount of indebtedness, rate of interest and the rent per cultivated acre, besides a correspondence between the caste of the cultivator and the grade of the soil.[1] If caste exercises such a great influence in one of the most prosperous districts, it is clear that social reforms have an important part to play in the reorganization of farming in the country.

The profound effect of the caste system on the economic life of an Indian peasant has been summed up as follows by the U. P. Banking Inquiry Committee.[2] The cost of cultivation is increased since the high castes must employ far more labour than the low. Secondly, high caste cultivation is rarely as skilful or productive as low-caste cultivation. Where the Kurmi produces

(1) 'Land of the Two Rivers.' *Op. cit.*
(2) Vol. 1 *Op. cit.*, p. 35.

wheat, the Brahman produces barley and only second rate barley. On the other hand, the high caste usually enjoy a rental privilege, which is often as high as 25 per cent and generally possess far more than their fair share of the larger holdings. The Brahman, moreover, by virtue of his Brahmanhood, has a subsidiary source of revenue in the shape of priestly and caste dues.

In short, the high caste agriculturist possesses certain definite advantages, which are, however, more than counterbalanced by the costliness of his cultivation and the inferiority of his crops. He also has to bear specially high expenditure as a result of his social obligations.

Joint Family:—These remarks suggest the same conclusion that institutional control of economic life has outlived its utility and should now be replaced by a better system of social security, which may guarantee freedom from the four wants to the individual, and economic progress and prosperlty to the nation. This is forced on us by another consideration as well, viz. the weakening of the authority of the joint family, a characteristic feature of the social order in India. It means commensality, joint worship and co-sharing of the property ordinarily among all the descendants in the male line of a common ancestor, their wives and unmarried daughters.

Originally, it worked as a system of social security where the infirm, old, unemployed, sick and widows were all guaranteed subsistence out of the family income consisting of a common pool to which each earner contributed according to his capacity. This institution also assured the requisite supplies of labour on the holdings, under the system where the import of outside labour was looked down upon and the technique of farming required the employment of considerable hands at certain times. The standard of cultivation thus depended on this social institution, which in a way conceived an embryonic collective farming among members held close by a blood relationship. Consequently, each member was entitled to a share in the family property from his very birth, and thus shared in full the advantages of a collective security, while the family property itself remained undivided generations after generations due to the jointness of the family. The system

also contributed to simplicity and economy in living by obviating separate establishments for each married couple. The scope for savings, division of labour and mobility was thus considerably wide.

The joint family has now assumed a new importance and role as the system has been put to a severe test by the increased presure of population on the soil There is no longer enough work on an average holding for all the members of a family and yet commensality has continued for separate establishments have become all the more difficult with the reduced incomes. A system designed originally for prosperity has, ironically enough, become the sheet-anchor of poverty. The average number of persons per house is still on the increase in 1941 being 5·116 as against 4 965, the 1931 average for the country as a whole. But while the form has been preserved as an economic necessity, the reality has been lost in the individualistic land tenures, through the administration of civil justice according to laws based on the recognition of private rights and obligations of an individual, and by the impact of new economic forces, which have necessitated dismemberment to seek employment outside the village to maintain even the barest living standard. The housing difficulties in factory areas have also contributed to the disintegration of the family. The family of the landless proletariat has been the first to be broken where necessity compelled some to move out to seek employment in factories, and even those who remained behind, in the absence of any common ties of property, found it easy to part and live separately on their own separate earnings. The artisans have also been compelled to move out in a similar way but those left behind have held together, for the village industries had little scope for separate organizations in each group. Usually, therefore, in the village the family of the artisans is on an average comparatively large. The agriculturists were soon lured by the individual private property rights under the British land settlements, and though preserving the form of the family soon divided their family lands and holdings so that land parcellment has become acute in the country. Sub-division and fragmentation of holdings are the two outstanding curses of the disintegration of the joint family of the cultivator. Between 1870 and 1901 the number of proprietors increased by more than 50 per cent in Meerut district alone and this gave opportunity to the

money-lender to dispossess the partitioned members of an agricultural family, of their property piece by piece. The lapse of the institution of the joint family amongst the agriculturists means not only sub-division of holdings into undesirably tiny fragments but a lowering of the standard of farming and earning as well. It also leads to higher expenses and more litigation, with a resultant increased indebtedness, expropriation and poverty.

Should then the institution be re-vitalized? One way of doing this would be to make the family property indivisible, but this by itself will not re-establish the authority of the joint family. The *karta* has lost so much of his prestige that a civil law can hardly re-establish him. But even if it were practicable, the joint family will now prove too weak to guarantee collective security in the new economic order that is emerging. The foundation of agricultural economy in particular, should now be laid on a much wider basis.

Customs:—Institutional controls have worked through the medium of customs impinging on the economic and social life of an individual, so much so that earning and spending appeared in the village more like a tradition than an activity. Their force has gradually weakened with the lapse of institutions, but like bad coins, bad customs have tended to replace the good ones, giving rise to a number of socio-economic evils. The customary ceremonial expenses are a fruitful cause of indebtedness and poverty. The custom of hypergamy resulted in grossly extravagant expenditure and now it is the latter which has acquired a great importance. Display and dowry have become a part of the marriage ceremony and account for much of rural indebtedness. Marriage however, is only one of the many ceremonies, which have to be performed by a Hindu—*Upnayan, Shradh,* and funerals are equally ruinous. Custom regulates more than the ceremonies only, for it impinges on many points so that the standard of living is nothing if not customary. Custom stands in the way of improvements of dietary, clothing and housing. It makes marriage universal and even the high birth and death rates are customary—customary because they are caused by certain social customs. It is true that illiteracy has been caused by lack of facilities, but now it is sheltered behind customs and superstitions so that the written letter is anathema for the women-

folk. The living of high caste women in seclusion is another custom which has given rise to a number of social and economic evils, while the maintenance of a social prestige has been the cause of much deficit economy in the agriculture of the high caste Hindus. Untouchability of the so-called 'untouchables' is a custom which is dying slowly, but which has already done much harm to some 50 to 60 million persons of the depressed castes. The method of cultivation and technique of farming are also entrenched behind customs and it is not easy to ignore what is customary.

In brief, customs still dominate both production and consumption in the village life, and since bad customs have replaced good ones, progress in agriculture requires a reorientation of social life and values.

CHAPTER II.

The Physical Background.

A. The Land.

In the agricultural economy of our country the physical environment is certainly more important than the economic and the social. First taking land into consideration, we note that in British India, the net cultivated area is only about 41 per cent., whereas about 18 per cent is not available for cultivation. Of the remaining 41 per cent, nearly one-third is under forests, 22% is fallow, and more than 45 per cent is classified as culturable waste.

Soil Survey: The geological structure of the country produces an appearance of uniformity in its soils, which ultimately turns out to be deceptive, for the soils formed with the same parent material often vary with variations in climate, topography, elevation and other factors. According to a note[1] by the Imperial Agricultural Chemist, having regard to the fact that in this country temperature and rainfall play the most prominent part in soil formation the best plan for an all-India soil survey would be to formulate our survey work principally on the basis of climate. The sub-committee of the Crops and Soils Wing of the Board of Agriculture and Animal Husbandry in India on soil surveys and soil analysis in 1935 recognised the need of an all-India soil survey, and recommended the organization of a Soil Bureau as part of the Imperial Council of Agricultural Research. Nothing substantial, however, seems to have been done so far to prepare an all-India soil survey, which may be of practical use is agriculture, though some work has been done in this direction on a local scale. If considerations of costs prohibit a survey of the Russian or the American type, let us have without delay a simpler survey, which may give us a clue to the nature and extent of the superficial deposits of clays, sand, loam, gravel and *kanker*, so that our projects for irrigation and agricultural development may be formulated on more definite and scientific data.

On the basis of the available geological data four main soil types have been recognized in India, viz., the alluvial, the red, the black and the laterite soils.

1. Proceedings of the 1st meeting of the Crops and Soils Wing of the Board of Agriculture and Animal Husbandry in India 1935, p. 226.

1. *The Alluvial Soils.* The most extensive and agriculturally the most important are the alluvial deposits comprising mainly the vast Indo-Gangetic plain, an area of 300,000 sq. miles being watered by the three great river systems, the Indus, the Ganges and the Brahmaputra. They cover the greater part of Northern India and extend in a narrow fringe round the coastline of the peninsula into the valleys of the Godavari, Krishna and the Cauveri. The thickness of the deposits exceeds 1600 feet below the ground surface while some borings indicate a depth of more than 3000 feet. The alluvial tract is a vast level plain presenting a monotonous appearance and yet containing within itself soils of various texture and physical consistency from sand or loam to sandy loam, clay, stiff, heavy and saline clay which is almost sterile and is known as 'Usar', *reh* and *Kallar*. Even the plant food and the calcium content differ greatly within these deposits. The percentage in oven dry alluvial soils varies from ·03 to ·103 of nitrogen, ·3 to ·7 of potash, ·08 to ·13 of phosphoric acid, and 3 to 2·0 of lime. On the whole, these deposits are deficient in phosphoric acid, nitrogen and humus, while the amount of potash and lime is adequate. The agricultural development of this tract, therefore, is to a large extent limited by the supply of nitrogen and humus. The sub-soils too are not uniform in texture, and consist of well-defined layers varying from pure sand to heavy clay and accounting for considerable variations in fertility. A marked characteristic is the formation of nodular calcareous material, known as 'Kankar' generally in the United Provinces. The Indo-Gangetic plain is traversed by the great perennial rivers whereas the sub-soil water is usually close enough to the surface. This makes irrigation easy, and it is therefore, that the tract contains within itself all the great canal systems of the country, and the two provinces of the Punjab and the United Provinces own ten million wells out of the fourteen millions in the whole of British India. The depth of soil secures great fertility, and with proper soil management the alluvial deposits present ideal condition for intensive cultivation with a capability of growing a wide variety of crops.

Territorially, they comprise the greater part of Sind, Northern Rajputana, the greater part of the Punjab, the United Provinces, Bihar, Bengal, half of Assam, the East and West Godavri, Kistna and Tanjore districts of Madras. In Sind water is the limiting

factor, and wherever it is adequate the soil is very productive, the main type being plastic clay. As we go east from Sind to Delhi, we cross the arid region, which includes Northern Rajputana and the North-West Punjab. It is covered by wind-blown sand. In the north at the base of the Himalaya mountains are the 'alluvial fan' deposits while below this belt in the United Provinces, Bihar and Bengal only is a belt of low marshy land, the soil ranging from clay loam to heavy clay: whereas in the northern Punjab are the wind-laid soils. Loams and sandy loams are the outstanding soils of the Punjab with shifting sand dunes and patches of clay. The soils of the United Provinces vary considerably and become progressively heavier as we proceed from the north-west to the south-east. Semi-arid conditions threaten the North-western districts of Aligarh, Muttra and Agra. In Bihar, the soil consists mainly of the older alluvium known as 'Bhangar' with frequent deposits of 'Kankar'. Bengal has the old alluvium in the west and the new in the east.

2. *The Red Soils:*—Excluding the Deccan trap (extending over about 200,000 square miles) and the narrow strip of coast alluvium, the whole of peninsular India is covered by the crystalline and gneissic rocks of the archaean system. These also extend to North-Western India, north of Baroda, in the Aravallis and Rajputana and Assam. The Central Provinces, Orissa and Chota Nagpur are also covered by similar rocks. The red soils covering a widely dispersed tract differ greatly in consistency, depth and fertility. Their characteristic feature is the red tint. By intermediate stages they vary from the poor, thin, gravelly and light-coloured soils of the uplands suitable for the cultivation of a poor crop like *bajra* only, to the rich, deep, darker-coloured, fertile soils of the lower levels. These soils are very deficient in nitrogen whose percentage in oven dry soil varies from ·005 to ·02, in phosphoric acid, the percentage of which varies from ·08 to ·09 and in humus. The percentage of potash varies between ·1 and ·35 while that of lime is less than 1·0. Due to the broken and undulating nature of the surface, conditions are most suitable for tank irrigation through storage of rainfall water.

(3) *The Black Soils:*—These are also known as the regur soils especially adapted to the cultivation of cotton and constitute the second great soil group of India. They are divisible into two groups. One group comprising the Deccan trap covers the greater

portion of the Bombay Presidency, Berar, the western parts of the C. P., and Hyderabad. These soils vary greatly in character and productivity from the thin and poor soils of the slopes and uplands of the lower trap hills which are moderately productive only in years with a well distributed monsoon, to the deeper dark-coloured soils in the broken country and the very deep black cotton soil accumulated by alluvial deposit. The second group comprises the Madras black area. These are never so deep as those of the Deccan trap and have below the surface a well-marked bed of 'kankar'. Both the types are highly argillaceous and contain a very high proportion of calcium and magnesium carbonates, and are also fairly rich in iron, lime and alumina. Their nitrogen content however is very low (·02% to ·05%), and similar is the case with phosphoric acid (·08% to ·2%). The percentage of potash varies between ·15 and ·8, and that of lime between 1·0 and 7·7.

The regur soils are extremely sticky when wet and produce wide and deep fissures on drying, and yet within a short period after heavy rainfall these lend themselves easy to cultivation. Without the rains, the Indian plough can hardly penetrate these soils, which otherwise yield magnificent crops of cotton and *jowar*. Irrigation has developed little as it was believed that these soils were unsuitable for artificial water supply. This however seems to be a mistaken belief.

(*4*) *The Laterite soils:*—Laterite is a porous clayey rock and the clay fractions have a high sesquioxide content. The soils are highly unsaturated and are markedly poor in silicates of the alkalies and alkaline earths. These soils occur in humid regions with heavy rainfall and represent the excessively leached soils. The littoral strips of the west and east coasts, the summits of the basaltic hills and plateaus of Central India and parts of Assam and Burma are covered with a cap of the laterite soils. On the higher levels the covering is exceedingly thin and gravelly with little power to retain moisture. Its agricultural value is small. But it is capable of producing good crops in the valleys and lower levels where the types are dark-coloured heavy loams and clays which readily retain moisture. These soils are markedly poor in potash, phosphoric acid and lime, while the nitrogen contents in oven dry soil vary from ·01 to ·04 per cent. They have a marked acid reaction due to the almost total absence of lime and magnesium, and the main

agricultural problem associated with these soils is the correction or amelioration of this acidity.

Optimum Soil conditions:—Having described the main soil types it would have been easy to pass to a consideration of the adaptation of crops to soil conditions. But in the absence of a soil survey, which may be of practical use to agriculture, coupled with an almost total lack of any special work to determine the optimum soil conditions, such a discussion is precluded. It is known only in general terms what types of soil suit particular crops, *e. g.* we know that gram does well on a sandy soil, that cotton gives good yields in loam, that wheat grows well on clay loam, or that leguminous crops do well in lighter soils. But such shallow knowledge is of no use in determining the limits in variation within a particular soil type for the production of an economic yield from various crops. Planning which may regiment economic husbandry in relation to soil variation will however, necessitate the determination of the optimum soil conditions. Likewise, there is necessity for soil surveys in relation to irrigation projects. Considerable areas in the Punjab and the U. P. have gone completely out of cultivation as a result of irrigation. A record of the chemical and physical changes in the course of this downward path of soil deterioration is essential to deal with the problem. The new irrigation projects should as well be undertaken after a thorough soil survey with reference to the future influences of water supply.

Soil Fertility:—The poor yields per acre in the country obviously point to the apparent poverty of our soils. But the hypothesis is not necessarily correct, for agricultural productivity is primarily a function of soil management, a subject to which we revert in the next chapter. What is however more alarming is an apparent progressive decline in fertility. The Agricultural Adviser to the Government of India, submitted before the Royal Commission that 'most of the area under cultivation in India has been under cultivation for hundreds of years, and had reached its state of maximum impoverishment many years ago.' The Royal Commission on Agriculture arrived at the same conclusion and opined that 'A balance has been established, and no further deterioration is likely to take place under existing conditions of cultivation.' But conditions seem to have changed since then with the cultivation of the heavier yielding varieties of certain crops, particularly

Percentage of forest area to the total area.

Province.	Percentage.	Province.	Percentage.
Assam	38·0	Bengal	9·3
Coorg	32·7	Orissa	6·5
C. P. & Berar	19·7	U. P.	5·8
Bombay	14·1	Punjab	5·4
Madras	12·3	Bihar	2·8
		Sind	2·4

If 20% be assumed as the minimum requirement, practically all the provinces except Assam, Coorg and the C. P., suffer from too few forests and their location at places too remote from the areas of cultivation. It has meant to the peasant the denial of a flat roof over his house, the door gaping wide without shutters, and furnishings without any furniture. It has pulled down the standard of his cultivation by obliging him to burn his manure in the absence of any firewood. It has adversely affected his animal husbandry by reducing the supplies of fodder. We have already noted how the removal of these giant sponges of Nature has been causing floods, eroding the cap-surface of the soil and reducing the surface and sub-soil water supplies for irrigation. Afforestation more urgently of certain catchment areas and slopes, and the dotting of the entire countryside with small patches of forestry, which may continuously yield fuel and fodder, should be the objectives of our forest policy to check erosion and desiccation, prevent floods and ensure the success of the water projects either for irrigation or power. But even more urgently than these we require the village forests to conserve the supplies of 250 millions tons of cowdung per year for manure and to yield fodder for the cattle, which is almost starving at present. Such forests can make a great contribution to the solution of our food and fodder problem. It is gratifying to note that the plans of the Government of India visualize the doubling of the present forest area, *i.e.* creating another 1,00,000 square miles of forest in British India. The Forest Department is trying to afforest areas with a rainfall of even less than 12 inches. If it succeeds, the solution of the country's forest problem may not after all be very difficult, provided the Government does not slacken its determination and effort.

B *Climate and Rainfall.*

Climate and in particular rainfall is a vital factor with regard to Indian agriculture. The two well marked seasons of Northern

India give it the two well-defined crops *viz.* the Kharif and the Rabi, whereas in peninsular India where seasonal differences are little the distinction fades into early and late. Meteorologically, there are three well-marked seasons: the winter from November to February with little rain, the summer from March to June, practically dry, and the wet season with heavy monsoon rains from July to October. The concentration of rains to practically four months in the year leads to a concentration of agricultural activity to these very months, while its failure, late arrival or early cessation causes scarcity, which may culminate in famine if it is acute or spread over two or more continuous seasons. The nature of crops grown in any particular area and the system of cultivation are determined by the normal amount of rainfall no less than by the character of the soil and temperature. The normal security of crops also depends upon the average amount of rainfall in any particular area, and the agricultural conditions of the different regions of the country fluctuate with the fluctuations of the monsoon rainfall.

With the hot rainy summers and cool dry winters the country's climate represents the Tropical Monsoon type, the rainfall being received chiefly from the south-west monsoon between June and October. The south-eastern portion of the peninsula gets its heaviest rainfall between October and December from the north-east monsoon; while the North-West Frontier Province, the North-Western districts of Punjab and the United Provinces, C. P., Berar and Hyderabad also receive some rains during the winter, which is practically rainless in the rest of the country. The winter rains are of great agricultural value, especially to the wheat-growing districts.

In describing the areas of uncertain rainfall, we may exclude at once two well-defined areas, *i.e.* the area of heavy rainfall and the area of constant drought. (1) The zone of heavy rainfall with a minimum of 100 inches is relatively secure against drought and famines. It consists of two sections, the one lying along the west coast of the peninsula where the dry season in the lower extremity is only of three months duration, and the second consisting of the Himalayan zones. Eastern Bengal, Assam and parts of the C. P. (2) The zone, of constant drought is also secure against famine, as here the plant life does not depend on rains for its sustenance. It con-

sists of the arid plateau and the arid lowland of Baluchistan, Sind, Western Rajputana and Western Punjab. It is characterized by very hot and dry summers and very cold and dry winters. (3) The areas of maximum insecurity consist of a zone of low average rainfall, say below 40 inches, where agricultural prosperity is primarily a function of well-distributed normal rainfall. It is here that the response to rainfall is at its maximum and the sufferings are the acutest if the rains fail. Whenever the south-west monsoon is weak, this zone is the first to suffer, and on the whole some part or the other of this zone has to suffer each year. It extends from Lahore to Allahabad and then across to Ajmere round Udaipur, Baroda and finally through the Bombay Deccan to Mysore. In the upper section rainfall is moderate in summer and below 5 inches in winter, while the mean January temperature ranges between 55° to 65°F. In the peninsular section, the rainfall is moderate in summer and the mean January temperature is between 65° and 75°F. (4) The security of crops increases above an average rainfall of 40 inches. This zone of moderate rainfall is spread over three more or less contiguous sections. The first begins from Allahabad and extends eastward to the Bay of Bengal. The second extends from the Bay of Bengal in the east to the western boundary of Bhopal in Central India and stretches to the river Godaveri in the south. Both these sections are warm and moist with dry winters. The third section consists of the east coast of the peninsula from the north of Madras to the south of Tanjore widening towards the Western Ghats. Here the summers are dry while the winters are moist, with an average rainfall of forty inches from October to December.

The average rainfall for the whole of India excluding the Himalayas and the Western Ghats has been computed at 42 inches in the year. It varies little from year to year over the country as a whole. But an all-India rainfall average has little agricultural significance and it is its distribution in the various zones that matters most. These are the individual zones that suffer in any year though it never happens that the entire country may experience a deficiency in one and the same season. The main weather features are determined by the cycle of solar activity and there appears to be some corelation between the sun spots and the amount of rainfall.

Agricultural Regions:—We are now in a position to go through the various agricultural regions of the country.

The main natural agricultural divisions are Continental India and Peninsular India, the region of the plains and the region of table-lands. This is based primarily on relief or elevation. and the two broad divisions comprise within themselves several distinct agricultural regions. Northern India, which is the region of the plains, consists of:—

1. *The Arid West*[1]*:* Beginning from the arid Baluchistan tableland, it extends over the arid alluvial lowlands of Sind to the uplands of Rajputana. With little or no rainfall, cultivation here is practically confined to the irrigated tracts while the main occupation of the people is pasturing; for obvious reasons the area is very thinly populated, the mean density varying from 4 per square miles in parts of Baluchistan to 103 in Rajputana. Though the region covers more than one-seventh of the country, it contains less than even one-twentieth of its people. It begins from the dry and barren mountains of Baluchistan, and passes through the arid deserts and stony plains to the equally arid plains of Sind, which but for the Indus would have been a desert. The entire valley of the Indus from Attock to the sea lies in a region of deficient rainfall—the annual average nowhere being more than 10 inches. Artificial irrigation from the seasonal floods in the Indus is the main prop of agriculture in Sind, where out of some 5 million acres of cultivated area more than 4·6 million acres have to depend on artficial water-supply. Without irrigation the plastic clay soil of Sind has little agricultural utility. The Lloyd Barrage has given security to the crops of the province by solving the difficulties in the way of flood irrigation here, while the shifting in the course of the Indus and the uncertainty of its floods have been the limiting factors in the development of irrigation and cultivation. Rice and wheat, both almost equally important, are the main crops, while *jowar*, and *bajra* taken together occupy as much area as wheat. Cotton is a valuable commercial crop of the tract which has significantly spread after the Lloyd Barrage. Rajputana is a sandy waste with little cultivation of anything except millets. Unlike Sind, there has been no development of irrigation facilities here so that the standard of cultivation is very low.

1. Consult "Atlas of India": by A. M. Lorenzo.

(2) *The Punjab Plains:*—This area is served by the Jhelum, Chenab, Ravi, Beas, and Sutlej, and hence derives its name, the Land of the Five Rivers. In the north there is the Himalayan tract while the north-west is a tableland. This region is thinly populated as the soil is rugged and rocky, and people live mostly by meadow husbandry. From here we pass to the northern submontane zone, the most fertile and thickly populated region of the Punjab, with an average rainfall of about 31 inches (varying between 30 and 40 inches). Further south we have the eastern humid plain on the one side and the dry western plain on the other. The south-eastern plain has an average rainfall of about 20 inches while the western has less than 10 inches. The agricultural security of the north and the north-western region is ensured by a sufficient summer and winter rainfall, while the dry western plain has been safeguarded by the world's most remarkable system of canal irrigation. In the submontane zone the irrigated area does not exceed 7 per cent. of the gross cultivated area as the soil has sufficient moisture to resist anything but absolute drought. It is, however, in the south-eastern plain that famines are recurrent and droughts have been frequent. Rainfall is a factor of vital agricultural importance in this region and well irrigation, which is too expensive, here fails to give protection particularly to the Kharif crops. The agriculture of the south-western plain depends little on the insignificant amount of rainfall which it receives, while agricultural progress and prosperity here have been based upon artificial water supply, which depends primarily on canal irrigation supplemented at places by well irrigation.

The Punjab has about 26 million acres of cultivated area of which about 17 millions are irrigated. This represents about 59 per cent, of the total area. The main crop is wheat, occupying about 32 per cent of the total cultivated area, and the province produces about 33 per cent. of India's wheat. It is here that we find the most remarkable development of dairying and animal husbandry in the country and hence no less than 17 per cent. of the cultivated area is under fodder crops, which is equivalent to nearly the entire area under fodder crops in the rest of the country. Millets, cotton and gram are the other important crops of the province. On the whole, the development of artificial irrigation has stimulated a higher standard of farming in this province than any-

where else, and there has been a pronounced tendency to grow more valuable crops. Consequently, the area under 'Rabi' tends to increase at the expense of the Kharif while the more valuable of the crops are replacing the inferior cereals within the Kharif harvest. The developments in irrigation and standards of farming have stimulated a phenomenal growth of population here, the average mean density having increased from 201 per sq. mile in 1901 to to 287 in 1941. The density is as high as 899 in Amritsar and 845 in Jullundur whereas the lowest is 16 in Dera Ghazi Khan.

3. *The Ganges Valley:* It ranks among the most productive and populated regions of the world, comprising a vast level tract of alluvial soil being watered by a number of rivers and their tributaries. The plain covers about 365,000 sq. miles stretching over the provinces of Assam, Bengal, Bihar, Orissa, and the U. P., with some 88 million acres under cultivation, *i.e.* about 42 per cent. of the country's total cropped area. It consists of a densely forested submontane belt, the 'Bhabbar', the uplands of older alluvium, the 'Bhangar', and the lowland plains of newer alluvium, the 'Khadar'. The upper Ganges Valley itself has two distinct agricultural regions, the east and west. It has two well-marked agricultural seasons, the kharif and the rabi and the rainfall decreases as we go from east to west. In the western portion the rainfall does not exceed 30 inches and is usually deficient. But the agricultural security of this region has been safeguarded by a phenomenal development of canal irrigation combined ingeniously with well-irrigation which is easily due to the nearness of the sub-soil water. And yet the least deviations from the normal annual rainfall register their effects on the cropped area while the yield is determined by the distribution of the rains in the year. Due to the low average rainfall the cultivation of rice is insignificant while wheat is the most important crop, followed by gram and barley. Sugarcane and cotton are among the important commercial crops. As we go eastward in the Upper Ganges Valley, agricultural security tends to increase with the increase in the average annual amount of rainfall. In this sub-region therefore, it is the seasonal distribution rather than the amount of rainfall, which is of vital importance to agriculture. Rice gains in importance so that nearly one-third of the cultivated area of the eastern portion of the Upper Ganges Valley is under it, whereas wheat becomes an insigni-

ficant crop occupying less than even 9 per cent. of the cultivated area. The cultivation of barley here is equally important while the area under gram is about half as much. There is hardly any cotton cultivation while sugarcane becomes the chief commercial crop. The crops here have been protected not only by a high average rainfall but also by a remarkable development of well irrigation. Both the sub-regions have extensive areas under double-cropping but the development of dairying and canal irrigation in the west has stimulated a more intensive and scientific cultivation there than in the east. The density of population increases with the importance of the rice crop, though this is by no means the only determining factor. The most densely populated areas are thus in the east, such as Gorakhpur, Ballia, Azamgarh, with more than 800 persons to the square mile. But the agricultural prosperity is now rapidly eclipsing the development in the east, and so Meerut is now supporting 816 persons per sq. mile while it had only 699 in 1931.

Further east, we have the Middle Ganges Valley with a rainfall of more than 40 inches, enabling a succession of three crops in the year as contrasted with two of the Upper Ganges Valley. This portion consists of two sub-regions, the north and the south. North Bihar gets relatively a higher rainfall than the south, and apparently enjoys greater agricultural security, which is also increased by the benefit of spill irrigation in its sub-montane region supplemented by water supply from numerous tanks and *tals*. But its agriculture is really less secure as well-irrigation has not been practicable and hence in years of drought there is little water available for irrigation from its system which depends on local rainfall from year to year. In the South, not only is the amount of rainfall relatively smaller, but its character is more capricious while the drainage is more rapid. Obviously the agricultural insecurity here is still greater. On the whole, due to the more abundant and regular rainfall, the Middle Ganges Valley has the advantage of three crops—Bhadoi, Aghani and Rabi. There is a predominance of rice cultivation, both winter and autumn in this region, which has enabled it to maintain a higher density of population than the regions beyond the rainfall line of 40 inches, in which wheat is the principal crop and the area under transplanted rice is small.[1] But the cultivation of

1. 'Economic Problems of Modern India, by Dr. R. K. Mukerjee'; p. 13.

winter rice gives the region a greater agricultural insecurity as well. Usually, the Aghani crops are sown before the Bhadoi are harvested and hence the second crops are the Rabi crops, which are more important in North than in South Bihar. Agricultural security increases with the importance of the Bhadoi and Rabi areas. Maize and gram are also important, while sugarcane rather than cotton is the chief commercial crop. The density of population exceeds 1000 per sq. mile in districts such as Saran, Muzaffarpur and Darbhanga, though in the Chota Nagpur division it is as low as 277 with only 186 in Palamau.

Finally we reach the Ganges Delta with a very thick population, consisting of the old Delta, where land formation is all but complete, and the new Delta, comprising the greater portion of East Bengal where new alluvial formation are still being built. It is this active Delta, which is receiving year after year a top dressing of silt rich in agricultural possibilities. The average rainfall is high, though in the old Delta covering the west and Central Bengal it is comparatively less than in the new. There has been little development of canal or well-irrigation in the old Delta, which has been found more or less impracticable so far and hence this portion has little protection against the failure or ill-distribution of rainfall. The new Delta receives a heavier rainfall and its agricultural security has been enhanced further by the river floods. The fertility of the soil also increases from west to east throughout the Ganges Delta, and this, coupled with the advantages of a high rainfall, enable the cultivator to have both the crops of Aman and Aus rice from the same field in East Bengal. In the West such a system of double-cropping is not possible, and the cultivators have to choose between the Bhadoi and the Aghani crops and take a second cheap catch crop. In Western Bengal, Aus rice, a cheap coarse grain, is the chief Bhadoi crop, while in the active delta its position is taken by Jute. Only a few crops are grown in Western Bengal where vast areas are cropped only once. In Eastern Bengal, on the other hand, several types of crops are raised and double-cropping is the main pivot of agricultural prosperity. Bengal produces mainly rice, and out of some 25 million acres of net cultivated area more than 20 million acres are under rice. The only other important crop is jute, which occupies nearly 4 million acres. The density of population is very high, being more than 2500 persons

per sq. mile in Howrah, 1500 in Dacca and Tipperah, and more than a thousand in a number of other districts. It decreases towards the west.

Further north and east are the Brahmaputra and Surma Valleys constituting one of the wettest and most fertile agricultural regions of the country. The rainfall here exceeds 100 inches and the seasonal river floods add to the agricultural security of the region. It is in the tracts of heavy rainfall and moderate spill irrigation that we find phenomenal agricultural productivity with the cultivation of the heavy-yielding varieties of rice. Comparatively the Surma Valley is more fertile as the swift current of the Brahmaputra in its valley leaves only the heavier portion of matter rather than the silt. Obviously the latter is less densely populated.

On the whole the Ganges plain supplies to the country all its jute, more than three-fourths of rice and maize, more than half of its gram, about two-fifths of its wheat, and more than one-fourth of its oil-seeds.

Peninsular India, which is primarily a region of table-lands, consists of the following agricultural divisions:—

1. *The Coastal Plains*:—These consist of two well-marked strips—the West Coast strip and the East Coast strip. The former is almost evergreen with a rainfall exceeding 100 inches and with a longer agricultural season, covering a larger number of days as we go to south until the slack season disappears altogether. The East Coast strip gets its rainfall from the north-east monsoon currents, though the north is benefitted by the south-west monsoon as well. On the whole there is a lighter rainfall here, ranging between 40 and 60 inches and diminishing towards the south, which enjoys relatively less agricultural security. The western strip has a greater amount of laterite soil, which remains unproductive without manure and irrigation. The ferruginous red soils of the eastern strip are more productive but require constant watering. Irrigation is therefore the determining factor of agricultural prosperity in these plains. The eastern plain has witnessed the development of canal irrigation while tank and well-irrigation are the characteristic features of the west coast. The coastal plains have on the one hand the plantation regions growing tea, coffee and

cinchona, and on the other extensive rice cultivation. In between, there are the cotton growing areas and areas where food and commercial crops have been ingeniously combined. Rice, sugarcane, groundnuts, tobacco and cotton are the main crops of the East Coast strip whereas the lowlands in the West Coast strip grow rice, cocoanuts, pepper, chillies and ginger, and the uplands have the commercial plantations. *Jowar* and *ragi* are also much in the field. On the whole, the agricultural economy of these plains is based on the combination of food and commercial crops. Here we no longer find such high density of population as we noticed in the rice regions of the Ganges Valley.

(2) *The Deccan Plateau.*[1] It consists of three distinct sub-regions. The Western Border Region slopes down the rocky edge of the Western Ghats having a scanty rainfall and is miserably exposed to droughts and famines. Irrigation has not yet developed to any considerable extent, and the sub-soil water is at a great distance from the surface. Cotton, wheat, *jowar*, and oil-seeds are the main crops. The Eastern Deccan (red soils region) covers Mysore, Madras, Deccan and East Hyderabad, and gets scanty rainfall. In the Mysore table-land, the hilly country is covered with evergreen tropical forest and the cultivable area is small. The area under irrigation as well as under non-food crops is rapidly increasing. The rainfall is more capricious in the Madras Deccan, and the standard of cultivation is very low, with little or no development of irrigation facilities. Wells are too costly while tank irrigation fails in years of drought. It is one of the blackest spots on the famine map of India with a population varying from 100 to 250 persons per square mile. In East Hyderabad the soil is sandy and irrigation becomes necessary. The storage tanks and a more regular and copious rainfall have added to the agricultural security of the region. *Jowar, bajra* and *ragi* are the main crops. The third division consists of the Black Soil Region, which is more fertile but less secure than the former, due to a more capricious and scanty rainfall. It covers West Hyderabad with *jowar*, wheat and linseed as the main crops. The irrigated area is barely 1 per cent. largely from wells, and the entire region is exposed to droughts and famines.

1. "Economic Problems of Modern India", Vol. 1, p. 29.

(3) *The Deccan Foreland:*—It extends from the arid tracts of Western Rajputana to the rice region of the Mahanadi Valley in the east. It consists of four distinct parts, viz. (*i*) the Plateau depending entirely on rains and yielding cheap millets, (*ii*) the Heavy Black Soil Region which is pre-eminently a wheat-growing tract, (*iii*) the shallow Black Soil Region, the cotton *Jowar* region; and (*iv*) the Region of Yellow and Sandy Soil, which covers the rice plains of the river valleys.

CHAPTER III.

Limits of Cultivation and Irrigation.

Relation between cultivated area and population:—The net cultivated area in British Provinces amounted to about 214 million acres in 1940-41 whereas the population stood at 295·8 millions. In other words, it is about 0·7 acres per head. Taking the major provinces separately, we find the cultivated area per head as 0·5 acres in Bengal, 0·6 acres in Bihar, 0·8 acres in Orissa, the U. P., and Madras, 1·2 acres in Punjab, 1·4 acres in Bombay, and 1·6 acres in C. P. and Berar. The capacity of agriculture to maintain people depends on the area under cultivation as well as on the pitch of cultivation. Unfortunately, the latter is not high in the country, and judged by the standards prevailing in Europe or America the productivity of land is very low. Professor East estimated a *per capita* minimum of 2·5 acres in agriculture as indispensible for the support of each person. Sir David Hall estimated in 1926 an available cultivated area of 2·4 acres per head for the white countries and 2·6 acres per unit of population in the U. S. A. He arrived at the conclusion that among the Western peoples, it requires something between 2 and 2½ acres of cultivated land to supply the needs of one unit of population living on the standard of white peoples.[1] The standard of living of our people is low, and it will therefore be wide of the mark to assume a minimum of two to two and a half acres of cultivated area for the sustenance of each unit of population. At the same time, it will also be wrong to assume that the present *per capita* acreage is sufficient for the country. Dr. Radha Kamal Mukerjee has regarded one acre of land *per capita* as indispensible for the support of man in agriculture in the East. On this basis he has worked out the relative co-efficients of over-population as 2·8 for Japan, 2·3 for China and 1·3 for India.[2] On the same basis he has worked out the co-efficient of over-population for the different provinces as 2·1 for Bengal, 1·58 for Bihar and Orissa, 1·35 for the U. P. and Madras, 0·89 for the Punjab, 0·63 for C. P. and 0·62 for Bombay. In simpler words, if Dr. Mukerjee's estimate is accepted as correct, British India should add

1. *Agricultural Journal of India* January 1927, p. 46.
2. "Food Planning for Four Hundred Millions", p. 6

at least some 80 million acres more of cultivated area to the land already under cultivation or in the alternative should raise agricultural productivity by more intensive farming. Actually, adaptation should be achieved by progress in both these directions.

There is another consideration as well, which necessitates a rapid agricultural expansion in the country. By 1941, India has added over 50 millions to its population in ten years. If population continues to expand at this rate, the country should add 5 million acres per year to its cultivated area under the present standard of farming, or should revolutionize its agriculture through improved farming technique and intensification of production. Progress in the intensity of farming can make up for the stability in the cultivated area against an expanding population. Actually, since 1901 the population of British India has increased by nearly 34 per cent. but the net cultivated area has registered an increase of only about 5 per cent, and even when we take into consideration the double-cropped area, the total cultivated area has increased by 10 per cent. only. This has certainly lowered the standards of farming and living in the country, reducing the people all the more to the verge of starvation with an average expectation of life at birth as low as 26 years. Practically half the population is underfed while chronic mal-nutrition has subjected nearly a third of the population to chronic diseases.

What, then, are the remedies for this state of disequilibrium between agriculture and population? Industrialization for the surplus agricultural population is one of the obvious remedies but this by itself will not create food for the starving millions, or place purchasing power in the hands of the poverty-stricken cultivators to meet their requirements of industrial products. It is the upgrading of farming efficiency by raising the limits of both intensive and extensive cultivation, that will bring freedom from want to the masses of the country.

Even in Europe[1] the problem of surplus population has given a new concept to land reclamation and improvement, which has been further stimulated by the policy of autarchy or self sufficiency after the Great War. It is no longer judged from the simple point

1. *Vide* 'League of Nations—Land Reclamation and improvement in Europe'.

of view of economic profit, and the land reclamation activity has a constantly widening range of objectives, which includes the improvement of the hygienic conditions of large tracts of land, extension of the area under cultivation, employment for maximum number of workers, internal land settlement, and the creation of new industries subsidiary to agriculture. These objectives can hardly be realized by the efforts of the individual and consequently the responsibility for such land transformation has devolved upon the State, which has usually intervened either in organization and supervision of operations or by giving financial assistance.

Land Reclamation:—What, then, is the scope of such land transformation in India? Unfortunately, no definite answer can be given to the question straightaway as the requisite data has not yet been collected. But it can hardly be denied that there is considerable scope. The Crops and Soils wing of the Board of Agriculture and Animal Husbandry in its biennial session held in November 1943 put the greatest emphasis on better utilization of land resources and urged three surveys, firstly of cultivable waste areas, to ascertain why they were not cultivated and to whom they belong; secondly, of primary catchment areas with a view to controlling erosion and improving irrigation, and thirdly, of cultivable lands not fully utilized because of deeprooted weeds, water-logging, etc., in order to prepare projects for their improvement. Such surveys have now become long overdue, but these will be of little use without a proper organization for carrying out the work of reclamation. Individuals cannot be entrusted with these operations, which obviously will be on a large scale and the State cannot rightly take the initiative and meet the costs so long as private interests are involved. It is therefore, essential for a planned scheme of land reclamation and improvement that all land to be brought under operation should first be nationalized. Such land reform will have to be supplemented by suitable national organisation for planning and carrying out the work of transformation. We may have something like the National Land Use Planning Commission and the National Advisory Commission on Land Use of the U. S. A. The programme of integral land reclamation in Italy also deserves our consideration. Reclamation works in Italy are carried out in accordance with a general scheme of operations in areas classified and delimited by the State under the name of *'comprensori'*. The State undertakes

operations recognized to be in the nature of public works, and private individuals are legally obliged to carry out the remainder. Whatever machinery is established in the country, it should operate with a plan of co-ordinated measures to bring more land under the plough by rendering the hitherto cultivable wastes, in the first instance, fertile and remunerative.

The Culturable Wastes:—Cultivation for obvious reasons cannot be extended to either forests or land not available for cultivation. In British India, 87·9 million acres and 146·8 million acres fall respectively in these two categories. Out of the remainder, 267 million acres are already under the plough. We can therefore look for extending the limits of cultivation to some 154 million acres of land which is classified in official statistics as 'culturable waste' though not yet brought under the plough. Considering the fact that the pressure of population on soil has been acute for long in the country, it is probable that the land classified as culturable waste is beyond the means of the ordinary individual to reclaim, and lies at the margin of fertility. But a substantial portion of it, though we have no definite information, can be made fit for agricultural colonization by the State through proper operations of transformation, water-supply, communication development and anti-malarial measures. Dr. Maclagan Gorrie, in a paper which he read before the Crops and Soils Wing of the Imperial Council of Agricultural Research at Baroda in November 1943, estimated that with large-scale planning some 170 million acres of 'barani' land and waste in the country as a whole, including the Indian States, could be brought into full cultivation. He arrived at this figure by taking 10 per cent of the net sown area, half of the current fallow, half of the cultivable waste, a quarter of the non-available waste and 10 per cent of the village forest land. Separately he has estimated the area of improvable land as 140 million acres for British India and 30 millions for the Indian States. If these estimates are taken as correct the limits of cultivated area can be increased at least by 50 per cent.

The extent of current fallows and other uncultivated land, which is culturable waste, in the different provinces is as follows:

In millions of acres:

Province.	Current fallow.	Culturable Waste.	
		Total.	Definitely known as culturable.
Ajmere-Merwara	0·21	0·25	....
Assam	2·13	17·68	....
Bengal	5·35	6·03	0·14
Bihar	6·85	6·43	....
Bombay	5·05	0·93	0·18
C. P. and Berar	3·73	14·08	5·14
Coorg	0·15	0·01	....
Delhi	0·01	0·06	....
Madras	9·29	11·31	....
N. W. F. P.	0·38	2·81	....
Orissa	1·59	3·27	....
Punjab	3·06	13·99	3·78
Sind	4·91	11·15	....
U. P.	2·51	9·85	....

No full information is available about the scope of bringing this land under the plough although certain areas are now definitely known to be culturable. A few estimates have however been made. Dr. Gorrie has estimated for the Punjab, that out of 13 million acres of Barani cultivation and 14 million acres of uncultivated waste, possibly 16 million acres are capable of a higher standard of land use. In addition he estimates that in Punjab out of current fallow and land under intermittent cultivation some 5 million acres more can be improved. The possibilities of land reclamation and improvement in this province alone are thus to the extent of 21 million acres. The U. P. Agricultural Reorganization Committee has estimated that the province can increase its productive capacity easily by about 25 per cent by reclaiming all the culturable waste, which is equal to about 28 per cent of the culturable area of the Province[1]. In the C. P. and Berar, nearly 40 per cent of the culturable waste is already known to be definitely

1. See Report Vol. I p. 251.

culturable and it is probable that the remaining areas are also such. Considering these, it will be a fair estimates to regard some 150 million acres in British India alone as the improvable land out of the culturable waste and current fallow.

Methods of Land Reclamation:—We have already examined measures for the prevention of the extension of ravine areas and methods for the treatment of ravines already in existence. Reclamation of the alkali land presents the next important problem. Two main types of alkali land may be distinguished *viz*, soils characterized by an excess of soluble salts, and soils containing abnormal amounts of replaceable sodium. The Committee on Soil Amelioration of the Board of Agriculture and Animal Husbandry in India has made the following observations in this connection. The first types can often be reclaimed by Leaching alone, while for the second the reconversion of sodium clay to calcium is essential. The application of heavy doses of irrigation water, followed by the growth of suitable crops in rotation, has been found most effective in the reclamation of Kala land in Sind. Systematic cropping has been found necessary to prevent the reappearance of alkali in reclaimed areas. In the Punjab, simple leaching combined with deep cultivation with the aid of steam tackle has given successful results. The alkali land known as 'Bari' has responded well to treatment with gypsum and calcium chloride. The Punjab Irrigation Research Institute adopted the construction of deep open drains around blocks of suitable size followed by heavy leaching combined with the application of gypsum for the reclamation of canal irrigated land, which had gone out of cultivation due to excessive alkalivity associated with a marked rise in the sub-soil water level. Cropping with Rice and then with Bersum have been the next stages. The soil wastes of North Bihar cannot be classed as definitely *uasar* or *kallar* but have a distinctly high PH. Here alkalivity can be reduced by the use of liberal doses of organic manure and by green manuring.

Usar Land Reclamation Committee[1]:—In the United Provinces a Committee was appointed in 1938 to examine the entire problem of *Usar* lands. It found that *Usar* was included in some way or the other in 14·98 million acres in the province. The whole of it is not alkaline or saline. There are some 9·9 million acres of

1. See Report Vol. 1.

culturable waste or *Banjar* in addition to some 5'1 million acres which is classed as 'otherwise barren,' consisting of sandy areas, ravines and stony soils. The Committee recommended the setting up of a provincial Waste Land Reclamation Board to deal with the reclamation, improvement and conservation of waste lands and recommended necessary legislation for the same. As for the various methods for the reclamation of *usar*, it made the following observations:—

(*a*) Electroculture for improving intractable alkali areas has not yet established its effectiveness.

(*b*) Gypsum, sulphur, iron sulphate and alum will generally be too expensive as agents for reclamation.

(c) The possibilities of using molasses as a reclaiming and fertilizing agent should be explored further, particularly in areas near sugar factories.

These observations related to wastes, where cultivation may be an economic proposition after reclamation. The Committee recommended for these areas, leaching, where surplus canal water is available, sinking of wells and setting up of *bundhis* on contour lines for impounding rain-water in other areas in addition to working out appropriate types of saltworts suitable for the alkali soils. With regard to the water-logged areas the construction of more shallow drainage cuts was recommended. For waste-land, which cannot be brought under the plough or whose cultivation would not be an economic proposition, the Committee suggested the system of controlled rotational grazing by paddocks and utilizing pockets of good soil for the plantation of trees leaving the surrounding *usar* land for improved fodder. These unculturable waste lands consisting of ravines, *bhor*, *khola* etc., should be so managed as to produce whatever vegetation they are capable of producing to the maximum extent. The Committee emphasized that the *usar* areas should be considered as ancillary to the agricultural economy of the village and should be developed with the object of restoring the balance in the village economy so that the cultivator may have more of fodder and fuel. It found that the waste lands would not usually be available for planting a colony of landless labour. They also drew attention to soil conservation and prevention of land deterioration and recommended a systematic policy of affore-

station along the borders of Agra and Muttra to check the onward march of deserts and also drew attention to Taungya plantation. The Committee were not in favour of acquiring outright any area for the purpose of its reclamation except under the Land Acquisition Act. The Committee's recommendations in this respect do not seem very sound and acquisition rather than leasing will always be more effective. We should not try to perpetuate a system of private interests in land, which has proved to be the weak link in the organization of our agriculture.

In Central India, Bundelkhand and parts of the Central Provinces, the main problem in land improvement has been caused by a perennial deep-rooted grass known as *'kas'*. Tractor cultivation has been found effective in certain parts for controlling this pest. At the Institute of Plant Industry. Indore, eradication has been effected by much simpler methods *viz.* by an occasional deep cultivation with the help of an adjustable *'bakhar'* drawn by four bullocks. The war has created in a way new opportunities for land reclamation. The Army has trained large forces of men to drive machines and tanks. All this machinery after suitable adjustments together with the forces can be utilized with advantages in the period of demobilization for deep cultivation and tractor ploughing, and even the worst areas of deeply gullied uplands may be brought once again under the plough.

Intensive Farming:—Agriculture in India offers great scope for development not only in the direction of extending the limits of cultivation to the culturable but hitherto uncultivated lands, but equally great opportunities in raising the pitch of cultivation itself. We have already examined how farming in India usually implies mainly the cultivation of cereals, a practice which throughout the world gives much lower returns than specialized or mixed types of farming. There is a great field for raising agricultural productivity and farm incomes by combining in the first instance the cultivation of crops with dairying, piggery or poultry-farming on the field, and secondly, by growing more of 'protective' foods, *i.e.* vegetables and fruits. By shifting the emphasis of production from grain to milk, eggs, pork and mutton, fresh vegetables and fruits, agricultural productivity can be raised at least by cent per cent, in the not distant future. Again, cultivation in the country means in general the sowing of single crops and double cropping is

confined to less than one-sixth of the net cultivated area. It obviously signifies a very low pitch of cultivation. A more intensive use of land, at least doubling the present area sown more than once, should be one of the primary objectives of our agricultural policy. This will raise [illegible] productivity by some 15 per cent. Finally, with the present standards of [illegible] there is considerable waste in the use of land in so far as the yields obtained are very poor. The average yields per acre in British India are about 940 lbs. for rice, 775 lbs. for wheat, 875 lbs. for barley 575 lbs. for *juwar*, 940 lbs. for maize, 685 lbs. for gram, 345 lbs. for linseed, 3161 lbs. for sugarcane and 127 lbs. only for cotton. The yields are much higher on Government and other large scale farms, having proper capital and organization. Land has certainly been put to more intensive use abroad, as can be judged by the fact that Japan with less than one-tenth of our rice acreage produces almost half as much rice as we do, that the average yield per acre of wheat in United Kingdom is thrice that of India, that Germany gets more than double our quantity of barley from only two-thirds of our barley acreage, that the outturn of sugar per acre in Java is about six times that in our country, and that the average yield per acre of cotton in our country is about one-eight of that in Egypt. The deduction is obvious that agriculture has become a deficit occupation in India and the efficiency of land use is considerably lower in comparison to foreign countries. The limits of intensive cultivation can easily be raised by proper equipment and organization within say, a generation by at least cent per cent in the direction of average yields per acre. The combined effect of the change in agricultural production, increase in the area under double-cropping and higher acreage yields, would be a rise of at least 200 per cent. over the present agricultural production within the next two or three decades by a proper utilization of intensive cultivation alone. Such intensive use of our agricultural land has so far been limited by our system of soil management, farming practices and equipment and irrigation facilities besides the inertia caused by socio-economic forces. The limits of intensive cvltivation therefore, however wide cannot be exploited without revolutionary improvements in these directions.

Soil Management: In order to make the land yield the maximum out-turn, the soil should not only contain the required elements in

sufficient quantities but its physical condition should also be good enough to facilitate good root growth by regulating air and water supply. Indian soils in general are deficient in organic matter and of the principal plant-food materials, are deficient in nitrogen.

'India, as is well known,' (reported the Royal Commission on Agriculture in India) 'depends almost exclusively on the recuperative effects of natural processes in the soil to restore the combined nitrogen annually removed in the crops, for but little of this is returned to the soil in any other way. Much of the farmyard manure available is burnt as fuel whilst a large quantity of combined nitrogen is exported in the form of oil-seeds, food and other grains, and animal products such as hides and bones.' This sums up admirably the problem of the manurial economy of Indian agriculture which is ever becoming acute as the cultivation of heavier yielding varieties without an adequate manurial treatment is further depleting the soil reserves. Increasing fuel shortage in the absence of plantations near the villages has obliged the cultivator to use cow-dung as fuel—causing a great agricultural loss, which, as emphasised by Dr. Voelcker as early as 1893, amounted to a waste of 29·25 lbs. out of 30 lbs. of nitrogen in every ton of farmyard manure. The only way of stopping this is to provide an alternative supply of fuel, the most hopeful method of which, as pointed out by Sir John Russell, is to plant quick growing trees near the village. Such a combination of forestry with agriculture will on the one side be a help in reclamation and improvement of land and on the other will facilitate a more intensive use of the cultivated land. The supplies of farmyard manure may be increased considerably by the collection of cattle urine by adopting the practice of providing litter for cattle and the use of manure pits for storing garbage and sweepings. These together with other decomposed vegetable matter may be used as compost. The crop residues, weeds, leaves, jungle grass, etc., are available in enormous quantities. Their conversion to compost will add greatly to the productivity of the soil. But the Indore process, the only method popularized as yet, is too complex for the simple Indian cultivator. Moreover, the limitations of this fertilizer should not be overlooked. Sir John Russel reported 'I could find little direct evidence as to the fertilizer value of compost as compared with oil-cakes or artificial fertilizers, but

from the low contents of Indian soils in nitrogen and organic carbon, averaging about 0·05 and 0·06 per cent respectively—about one-third the values in arable soils in England—it is inferred that organic manures are greatly needed. In any case however, composting is to be encouraged in the villages on sanitary grounds even apart from any fertilizer value,[1] In addition, synthetic and artificial farmyard manure is being prepared by the various agricultural departments on other lines and suitable methods have now been evolved. Another very valuable source of organic manure is the material known as gutterfly consisting of the residue of cotton waste and containing about 1 per cent. nitrogen. The cultivators in the vicinity of cotton mills can remarkably improve the condition of their soil by the addition of gutterfly.

Human excreta or night soil is another important source of manure, which has been almost entirely neglected in our country, in the main due to caste prejudice and conservatism. Its conversion into poudrette however tends to facilitate its application. The comparative effect of the application of cattledung and poudrette may be judged from the following table[2]:—

Yield per acre in lbs.

	Paddy.	Cotton.	Juar.
No Manure	613	300	420
Cattle dung	1,153	400	485
Poudrette	1,283	488	540

Considering the importance of this source, every effort should be made to use to the fullest extent the night soil, whose annual average supply for the country has been estimated at three to four hundred million tons. While the muncipalities should link up their sewage disposal system to the agricultural requirements of the country, simple and inexpensive methods like the 'earth-closet' or the moveable latrine may be adopted in rural areas to conserve the supplies of night soil.

Green-manuring is another important source of organic matter, which ordinarily implies turning under the undecomposed plant material grown in the field. It means the growing of a crop for no direct financial advantage, and so its scope is limited by the

1. Report on the work of the Imperial Council of Agricultural Research p. 62.
2. 'Agriculture and Live-Stock in India January 1937' p. 5.

poverty of the Indian cultivator and the small size of his holding. Moreover, at least 12 to 16 inches of rain must be received after the inversion of the green crop for a proper rotting of the organic matter and also to support the subsequent *rabi* crops. Hence it is of particular importance to the rice zones where rainfall is heavy and where the *rabi* land may be utilized for growing the green crop, which may be cut and added to the rice fields at the time of transplanting. In other tracts a more effective proposition will be the cultivation of crop such as 'dhaincha' and groundnut whose leaves may be used as green manure while the main crop may yield a direct financial return. This implies a judicious system of rotation of crops, which may include the leguminous crops as well, which have varying power of fixing nitrogen in the soil.

Oil cakes are excellent fertilizers, and the country has stood to lose by the exports of enormous quantities of oil-seeds and oil-cakes. The Board of Agriculture in 1919 and the majority of the Indian Taxation Enquiry Committee, therefore, recommended the imposition of an export duty on these products. The Royal Commission on Agriculture in India likewise hoped that an extension of the oil-crushing industry would undoubtedly tend to promote the welfare of Indian agriculture. The present war has given a fillip to the oil-cruishing industry in India, and yet the total quantity of oil-cakes produced in the country amount only to about 14½ lakh tons per annum, half of which are required for feeding the cattle. The remaining half is too inadequate for meeting the full manurial requirements of the country and hardly sufficient is left for manuring food-grains. The future development of the vegetable oil industry will no doubt promote the efficiency of Indian farming. Bones, bone-meals and fish are other important sources of manure, particularly as a means of rectifying the deficiency of phosphates, which is marked in peninsular India. Their use has so far been scanty, mainly due to prejudice, ignorance and lack of facilities. The establishment of small bone-crushing factories in the interior of the country subsidized by the Government may be helpful in popularizing the use of this important agent.

Finally, we are left with the chemical fertilizers, whose application was slowly but steadily developing before the War (from 800 tons in 1910 to nearly 110,000 tons in 1939). According to Sir John Russell: 'The results given by fertilizers depend almost entirely on the water supply. In regions of precarious rainfall or

inadequate irrigation, artificial fertilizers usually fail, and organic manures are erratic in their action. With good moisture supply artificial fertilizers are more effective. Nitrogenous fertilizers usually give the largest returns. In some of the experiments one maund of sulphate of ammonia in addition to the normal light manuring gave the following additional maunds of produce:—

55 sugarcane	....	.... 1 tea.
5 sugar	..	.... 4·5 paddy.
15 potatoes	....	.... 3 wheat
1·2 leaf tobacco	....	.... 1·6 seed cotton[1].

Yet the country produced annually before the war only about 28,000 tons of sulphate of ammonia at an average. The Food-grains Policy Committee (1943) emphasized the imperative necessity of setting up on a large scale a fertilizer industry in the country. The Committee pointed out that experiments indicated that the application of sulphate of ammonia at the rate of 16-20 lbs, of nitrogen per acre would result in an increased yield of the order of 3 maunds of cleaned rice per acre. They strongly recommended to the Government to give with the least possible delay necessary assistance and facilities for the importation of plants for the manufacture of this fertilizer to the extent of at least 3,50,000 tons a year[2]. This target was fixed only with the idea of meeting half the average deficit in rice. A conference of the representatives of the chemical industry and of the interested Government Departments, held on 29th and 30th September 1943, estimated a requirement of 1 million tons of ammonium sulphate to enrich the 250 million acres of cultivated land. The Government of India has at last decided to establish the fertilizer industry in the country and a British mission of experts on chemical fertilizers has visited the country to advise on the type of plant, the process of manufacture, suitable sites and the size of production. The need for the manufacture of phosphatic fertilizers is also great. The investigations at the Indian Institute of Science, Bangalore, show that the phosphate deposits of Trichinopoly in Madras and those of South Bihar, estimated at 7 million tons, are eminently suitable for extraction and use.

Technique and Equipment:—The efficiency of farming in the country has been at a relatively low standard, due further to under-

1. Report on the work of the Imperial Council of Agricultural Research p. 63.
2. Report p. 22.

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capitalization, poor equipment and traditional farming practices. To begin with, agricultural productivity has remained poor on account of the bad seed, as the new varieties are not as yet in general cultivation. The improved varieties are superior in yield, quality or suitability to special conditions of the environment, and yet their cultivation has been confined to some 20 million acres distributed as follows:—

Acreage in million acres.

Crop	Total.	Under Improved variety.	Percentage.
Sugarcane	4·00	3·22	80·0
Jute	2·18	1·12	50·0
Wheat	33·61	6·96	20·6
Cotton	26·00	5·04	19·2
Rice	83·43	3·58	4·3
Groundnuts	5·86	0·22	3·4
Millets	38·69	0·34	....
Gram	16·90	0·33	....

Perhaps the main difficulty in the popularisation of the improved varieties has been the defective system of seed distribution and the absence of a proper organisation for the multiplication of and trade in the approved varieties of crops. The effect of the improved variety on productive efficiency is however great and Clark estimated that the output of the crop area might increase by some 30 per cent by this improvement alone. It is said that the search for better varieties has been vigorous though there is still a great room for improvement. Improvements in the varieties of millets and oil-seeds have been little, and sufficiently heavier yielding varieties have not yet been evolved in case of wheat. There has been little work in the direction of evolving drought or disease resisting strains. Quality has received less attention as compared to yield. In certain cases there has been an undue multiplication of new varieties bewildering the farmer. Crop improvement by plant breeding is ultimately limited by farming practices and soil management. We cannot therefore look to progress in agricultural efficiency without an all-round improvement.

As far as the cultivator's equipment is concerned, it is confined to a hoe, a country plough, and a beam. The Indian cultivator

struggles against his hostile environment almost without any outfit or capital, and ekes out a poor living with poor yields and low standard of farming. He is poor and therefore cannot purchase more efficient tools. The capacity of his draught cattle is small and so he cannot work with the heavier implements. His fields are small, having little turning room for the improved equipment. The obvious result is that with his poor age-long traditional equipment the farmer in India merely scratches the soil rather than cultivates it, employing the methods of extensive and primitive cultivation on holdings with a very heavy pressure of population. The new implements, which are lighter and require less labour of man and of bullocks, are not always more effective and so far only a few improved ploughs and chaff-cutters have been taken up by the cultivators. For a system of farming that may give us the maximum outturn based on appropriate capitalisation, mechanization and scientific technique, the entire face of the land will have to be changed abolishing the present small fields and the present direction of agriculture, which is in the hands of capital-less petty cultivators. The effect on production of such a break from the present structure of agricultural industry to large-scale exploitation will be tremendous.

Irrigation Facilities:—One of the limiting factors in the development of agriculture in the country has been the paucity of irrigation facilities. Irrigation is of special significance to farming in India, because of the capricious nature of Indian rainfall, and is the only means of ensuring agricultural security. Its development therefore has been associated with an extension of the cultivated area and an improvement in the standard of farming. The pitch of cultivation is also raised with irrigation, so that not only does it facilitate the growth of a second crop and thus increase the areas under double-cropping, it also enables the agricultural yield to increase to the fullest extent. The average yield per acre in the United Provinces of rice, wheat, and barley is usually above 1050 lbs. on irrigated areas whereas it is as low as 750 to 800 lbs. on unirrigated fields. Similar is the case with other crops, and the yield of cotton and gram has been more than doubled with irrigation. The cultivation of certain crops cannot be undertaken without artificial water supply, and in particular vegetable-growing and market gardening depend entirely on irrigation. Special types of farming and commercialization of agriculture are not practicable

propositions without facilities for supplementary waterings. Such facilities at present are however very meagre, and only about 55 million acres are irrigated in British India, representing about 22 per cent of the cultivated area. Due to differences in the nature of soil, water resources and character of rainfall, the development of irrigation facilities has not been uniform in the various provinces. In the Deccan trap, where rivers are few and the sub-soil water lies at a great distance from the surface, irrigation progress has been small. In Sind, on the other hand, where little cultivation is possible without irrigation, and water is available from the rivers, there has been considerable extension of irrigation.

The following table summarizes the irrigation facilities in the various provinces:—

Area under irrigation in 1940-41 in each province.
000 acres.

Province.	Net cultivated area.	Total irrigated.	Irrigated by				
			Canals.		Wells.	Tanks.	Other sources.
			Government.	Private.			
Ajmer-Merwara	403	145	....	....	103	42	·1
Assam	6,789	965	·2	562	....	1	402
Bengal	24,715	1,798	242	263	44	817	433
Bihar	17,924	5,243	730	916	555	1,410	1,632
Bombay	28,713	1,138	245	67	694	112	20
C. P. & Berar	24,546	1,787	....	1,547	165	....	75
Coorg	152	4	3	....	....	1	....
Delhi	205	76	40	....	34	2	....
Madras	31,979	9,221	3,928	143	1,446	3,395	308
N. W. F. P.	2,357	981	427	405	79	2	68
Orissa	6,101	1,405	314	54	9	300	728
Punjab	28,171	16,898	11,565	475	4,682	46	130
Sind	5,370	4,492	4,092	10	19	....	372
United Provinces	36,540	11,634	,774	30	5,936	14	1,880
Total	213,963	55,789	25,360	4,472	13,765	6,144	6,049

On the whole, some 4 per cent of the net cultivated area in Bombay, 7 per cent in Bengal, the C. P. and Berar, 14 per cent in Assam, nearly one-third in Bihar, Madras and the U. P., 60 per cent in the Punjab, and 84 per cent in Sind is irrigated. One of the obvious effects of these limited irrigation facilities has been that farming in the country has largely been confined to the cultivation of cereals. Even among them, artificial waterings have to be limited to the more paying cash crops grown for the markets, leaving the subsistence crops of the peasant to the vagaries of rainfall. It is this limitation, which has contributed to make the country's food precarious and famines recurrent.

The following figures are significant in this respect:—

Area under irrigation in British India in 1940-41.
000 acres.

	Total cultivated.	Irrigated.	% of irrigated to cultivated.
Rice	68,849	20,329	29
Wheat	26,446	12,286	46
Barley	6,328	2,806	44
Jowar	21,249	1,454	7
Bajra	14,085	1,373	9
Maize	5,730	1,259	22
Other cereals and pulses	45,000	6,725	15
Sugarcane	4,402	2,801	63
Other food crops	....	1,866	....
Cotton	14,083	4,056	29
Other non-food crops	....	5,984	....

The principal sources of irrigation in the country are canals, tanks and wells. Canals contribute to more than half of the

irrigated area in the country and contain some of the largest irrigation schemes in the world. There are some 20,000 miles of canals and 54,000 miles of distributaries. The most important amongst them are the Lloyd Barrage works of Sind completed in 1932 at a cost of Rs. 24 crores, the Sutlej Valley works in the Punjab costing more than Rs. 33 crores, and the Cauvery – Mettur Project in Madras, the largest single block masonry reservoir in the world, having a storage capacity of 93,500 million cubic feet. Canal irrigation has developed most in the Punjab. Sind stands second, though at a great distance, with the U. P. and Madras following it close. Elsewhere, its development has been meagre. The canals of Northern India have been drawn from the rivers, whereas in the Peninsular India, where rivers dry up during the dry months, storage works have been constructed to feed them. The canals taking their supplies from the rivers are either inundation or perennial ones. The inundation canals are drawn without the use of any barrage and the supply of water in them depends upon the natural flood level in the river. These canals, mostly found in Sind and Punjab, are not capable of affording irrigation facilities during the winter or the summer months. On the other hand, the canals derived by putting a barrage across a river are perennial, like the storage work canals. The great irrigation works of the United Provinces and the Punjab fall in this category, while the Sukkur Barrage in Sind has transformed the inundation canals there to this type.

The Government irrigation works are classified into productive and unproductive. The former are expected to yield within ten years of their completion a net revenue sufficient to cover the annual interest charges on the capital investment. Out of a total capital out-lay of Rs. 152 crores on the Government irrigation works till 1938-39, Rs. 114 crores were invested in productive works, giving a net revenue of Rs. 8·67 crores *i.e.* 7·61 per cent on the capital out-lay. Deducting the amount of interest there was a net profit of Rs. 4·18 crores. All other works are classified as unproductive, and are primarily undertaken to ensure protection against famines in precarious tracts. Previously loans could be raised for the construction of productive irrigation works only, but since 1920 all works can be financed by loans though the approval of the Secretary of State and the Government of India was necessary for those costing

more than Rs. 50 lakhs. The success of an irrigation project cannot rightly be judged like that of a protective duty by the direct monetary returns that it yields. The provincial Governments should therefore exploit to the full their credit resources in the money market for developing irrigation facilities to the maximum.

The charges for canal irrigation water differ according to the crops grown and the basis of assessment is not uniform. In Sind, the water charges are included in the land revenue assessment; in parts of Madras, the U. P., and Bombay the revenue rates differ for irrigated and unirrigated lands, while the water charges for canal irrigation are levied separately at a flat rate according to the crops grown but irrespective of the water used. The rates are lowered for lift irrigation. In the C. P. and certain parts of Bengal there is the long-lease system and the cultivators have to pay a small rate each year whether the water is used or not. These differing systems of fixing water rates have caused on the one hand great differences in the irrigation charges in the various parts and on the other a great waste of water. In the U. P. the rates differ for sugarcane from Rs. 4 per acre (lift) to Rs. 12 per acre (flow), whereas the rates for the same in the Punjab vary between Rs. 7-8-0 and Rs. 12. The rates per acre for wheat are Rs. 5 in the U. P. but vary between Rs. 3-4-0 and Rs. 5-4-0 in the Punjab. These are but typical cases. In so far as irrigation charges form part of the cost of production, water-rates should be standardized. The same should be revised from time to time to bring crop adjustments in any system of planned agriculture. Likewise a system of distribution of water by volume will introduce considerable economy in the use of canal water.

Wells serve nearly one-fourth of the irrigated area. These are mostly private works though the Government has encouraged their construction by advancing *'takkavi'* loans, providing cheap facilities for boring, and exempting improved land from any extra assessment. Roughly, the wells represent a capital outlay of Rs. 100 crores on the 2·5 million wells in the country, of which the United Provinces has 1·35 millions, Madras ·65 millions, Punjab ·34 millions and Bombay ·29 millions. There has been little development of well irrigation in other provinces, except to a small extent in Bihar, due to either the defective nature of the soil or the deep

level of the sub-soil water. The wells vary from just holes in the ground, sunk to the water level aud used for a year or two, to the masonry wells costing from several hundreds to thousands of rupees and having a more plentiful and reliable water supply. The former are worked by the *picottah, dhenkli* or weighted lever, whereas the latter are usually worked by the *mot, charsa* or the Persian wheel with the invariable help of bullock power. Recently, attempts have been made, particularly in Madras, to substitute mechanical power and replace the leather bucket and the Persian Wheel by the water pump. Another progress has been in the direction of the sinking of tube-wells worked entirely by mechanical power. The United Provinces has about 1,500 state tube wells constructed at a cost of about Rs. 150 lakhs commanding roughly one and a half million acres of which more than 40 per cent. are to be irrigated. These are worked by energy provided by the Ganges Canal Hydro-Electric Grid. A recent feature of well irrigation, particularly, in Rajputana, Madras and Bombay, has been the registration of a declining trend both in area irrigated and number of wells. Fragmentation of holdings and desiccation are perhaps the most outstanding reasons.

Tanks serve about 11 per cent of the irrigated area, and an equal percentage is served by other miscellaneous sources. The size of tanks varies from the very small, commanding an area of ten acres, or so, to the very large ones such as Lakes Fife and Whiting in the Bombay Presidency, holding several billion cubic feet of water with water spreads of several miles through great chains of canals. Tank irrigation has developed most in Madras and next in Bihar. Sind, Punjab, the U. P., the C. P., N. W. F. P. and Assam have practically little or no tank irrigation. In the ryotwari tracts the tanks excepting the smallest are usually controlled by the Government but in the Zamindari tracts only the large tanks are State works. Many of the old village tanks are now out of order having been silted up. This source of irrigation depends on the annual local rainfall and hence fails particularly in the event of successive droughts, when irrigation is needed most.

Comparative Utility.—Canal irrigation is comparatively less laborious than any other form of irrigation. It is this ease and the very low pressure on human and cattle resources of this form of irrigation which has tended to transform the traditional sub-

sistence farming to specialization and cultivation for the market in the canal zones of Sind, Punjab and Upper Doab. Other forms of irrigation, leaving aside the machine-worked wells require many more labour units and even then take considerably more time to irrigate a given area. This limits the possibilities of the expansion of specialized farming by ordinary lift irrigation either from the subsoil or a storage. Mechanical lift irrigation, however, stands on a different footing and is almost as easy as and less laborious than flow irrigation from a canal. In brief with a given amount of labour and cattle, far less irrigated area can be worked on lift than on flow irrigation, on animal lift than on mechanical one, and on man-lift than on cattle-lift. Consequently the costs of irrigation also differ. The following is a comparative table of charges in the Upper Ganges Doab :—

Costs per acre of irrigation.

Crops.	Tube wells.	Masonry wells.	Canals.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Rabi	4 10 3	9 4 3	5 0 0
Sugarcane	23 2 9	36 1 6	10 0 0

But owing to the flat rate system in the canals the cultivator does not benefit through any reduction of water requirements on account of rains, whereas in other systems his irrigation expenses depend on the quantity of water consumed. On the whole, the net income per acre in Punjab has varied from Rs. 25·71, Rs. 10·45, and Re. 1·48 on the holdings of the peasant-proprietors, tenants and business man respectively in canal colonies to Rs. 26·45, Rs. 14·07 and minus Rs. 2·65 respectively in irrigated areas of the older districts, and Rs. 377, minus Rs. 2·19 and minus Rs. 5·76 respectively in the unirrigated areas[1]. According to the estimates of the Royal Commission on Agriculture the cost of irrigation from Canals (nearly Rs. 3-8-0 per acre) is but a fraction of that from wells, which comes to nearly Rs. 22 per acre[2]. But these very low costs of canal irrigation based on a flat rate have usually resulted in over-irrigation and deterioration of the standard of farming. The amount of excess canal water applied to crops like wheat in Northern India has been estimated at 30 to 50 per cent. Wastage is also due to the uncertainty of the canal water-supply. The

1. Farm Account in Punjab, 1938-39. p. 21.
2. Report, p. 343.

cultivator never knows definitely as to when the next watering will be possible. He has again no incentive to economize and the cultivator under the security of canal water does not attend to cultivation with the same effort which he devotes to the well-watered fields, where every drop of water has to be raised from the sub-soil. In consequence the yield from the well-irrigated lands is in general higher than from the canal-watered areas. The evil effects of the uneconomic use of canal water often extend beyond the crop-outturn to definite damage to the soil. Some ten per cent of the total area commanded by the Deccan canals in the Bombay Presidency has thus suffered a marked deterioration. Deficient drainage bringing in its train water-logging, swamps and formation of saline efflorescence, is a great menace in the canal-irrigated tracts. Canal irrigation confers greater agricultural security than other forms of irrigation, being more reliable and effective. Tanks and miscellaneous sources are extremely defective from this point of view. Yet canal irrigation is very inelastic and does not respond to variations in rainfall so that it proves inadequate in years of drought. On the other hand, well irrigation expands swiftly in the event of a rainfall failure and perhaps each drought leaves behind a fresh battery of wells. The sub-soil water at the same time does not depend on local rainfall and is easily the best source when driven by mechanical power.

Future Development.—Without the development of irrigation facilities to a very large extent, there is little scope for agricultural progress of the country. It can hardly be denied that there is ample room for extending irrigation in the country. For increasing production during the war-time, particularly to meet the food crisis, a number of short-term projects have already been drawn up. These include the installation of tube wells and pumping of water from river-beds by means of power pumps, the excavation of tanks, and the regulation of flow of water in small streams and *nalas* Besides these, certain major projects are also under consideration. The Punjab proposes to construct the worlds' highest dam across the Sutlej and has in addition a plan for the completion of the Thal project. The proposed Upper and Lower Sind Barrage will be comparable to the Sukkur Barrage The U. P. has also planned for new reservoir projects in addition to the construction of 200 new tube wells immediately. The plans of Bengal include an irrigation

and flushing project for an area of 916 square miles. Madras has a project for impounding the water of T[illegible] river and a scheme for the Lower Bhavani. Bombay is considering the extension of Ekruk Tank, Gokak left bank canal and a reservoir on Dharma river. These and other projects will add considerably to the irrigated area in the country, but a far more extensive development is needed to raise the limits of both extensive and intensive farming to a level at which it may respond to the need of the nation.

Irrigation authorities, however, have frequently expressed the opinion that we are nearing the completion of our river water resources for canal irrigation To illustrate, it is said that after the completion of the Sarda Canal in the United Provinces the principal water resources for perennial irrigation, have been almost completely tapped, and the U. P. Agricultural Reorganisation Committee expressed the fear that the canal water supplies are not adequate and need supplementing and are unable to cater for intensive farming. Likewise, with the completion of the Kalabagh weir on the Indus, the whole of the available supplies of water in the Punjab rivers will be used for irrigation. Future progress. therefore, lies in the following direction:—

(1) The sub-soil water reservoir has not yet been fully exploited. Mechanical or electrical irrigation offers a great scope through the sinking of tube wells in vast areas, particularly in portions of the Punjab, the U P. and Bihar. The low-lying rivers should likewise be tapped. It has been estimated for the United Provinces that no less than 12 inches of the annual rainfall sinks down each year to the ground. It flows at the rate of one mile a year and thus theoretically 12 inches of water are available under each acre of the province for irrigation which is sufficient for such intensive cultivation as to grow wheat on every cultivated area. Similar considerations apply to vast tracts in the alluvial plain of Northern India. What is needed for the exploitation of the underground reservoir is cheap electric power throughout the interior of the country-side, preferably in grids.

(2) The storage of water by means of high dams in the catchment areas may be another line of development. The Sub-Committee on River Training and Irrigation of the National Plan-

ning Committee opined that 'conservation of water by storage has become a matter vital to the future growth and development of the country and we recommend the initiation of extensive reservoir systems commensurate with the needs of the country.' Considering the topographical features of the country, such works will not be easy and their costs too will be heavy.

(3) Mr. C. H. Parr in a recent issue of "*Indian Farming*" has suggested flood irrigation. He says. 'If a single irrigation of flooding of 10 to 15 inches is given to the alluvial soils of Northern India, under ordinary cultivation conditions, enough moisture can be conserved by appropriate tillage operations to secure an eight anna crop of gram, barley or wheat, provided winter rains are not below the average for the Eastern Punjab or the Western United Provinces, where winter rains are about the minimum for Northern India'. He recommends a system of controlled flooding of fields in September and possibly August, through a canal system using from the mighty rivers the surplus water which they carry to the sea for about 90 days each year.

(4) By effecting economy in the distribution and application of canal water, at least about 10 per cent. more of crops can be irrigated. Much of the water is lost by percolation and evaporation in the distributaries, which loss can be avoided by lining and covering the main field channels. A system of volumetric distribution of water may help further in avoiding waste in its use. Finally, all possibilities of dry farming should be fully explored. It may require even soil bunding and changes in farming practice.

CHAPTER IV.

Agricultural Holdings.

Average size.—India is largely a country of small-scale farming and the holdings by successive subdivision have been greatly reduced in size to 'dwarf' and even 'uneconomic' units. According to the census of 1921, the average cultivated area per cultivater was 12·2 acres in Bombay, 9·2 acres in Punjab, 8·5 acres in the C. P. and Berar, 4·9 acres in Madras, 3·1 acres in Bengal, 3·1 acres in Bihar, and Orissa, 3 0 acres in Assam and only 2·5 acres in the United Provinces. Subsequent investigations indicate a further reduction in the average size. In Bombay, the report of the Land Revenue Administration 1921-22 revealed that 48 per cent of the cultivators held less than 5 acres each and only 23 per cent had 15 acres or more to cultivate. A recent survey of Bhiwandi Taluka shows that 69·1 per cent of the holdings are under 5 acres[1]. According to a survey by Dr. Ghatge and Patel in Charotar in the Kaira district, the net cultivating holding for the tract worked at 6A3Cg. In Anagan, a village of Surat district, more than 25 per cent of the holdings are less than 1 acre each. In Madras 76 per cent of the *raiyatwari* holdings have an average area of 2·4 acres, and in a typical village surveyed some years ago the holdings between 1 and 5 acres are 70 per cent. According to the estimates of the Revenue Department, the average size for the Province as a whole is about 4·5 acres. In Northern India conditions are still worse. Even in the Punjab, where holdings are relatively large, an enquiry conducted in 1926 disclosed that 23 per cent of the cultivators had an acre or less, 33 per cent cultivated one to five acres, 20 per cent held 5 to 10 acres, and only 24 per cent had more than 10 acres. The surveys conducted by the Board of Economic Inquiry, Punjab, bear witness to the same testimony. In Bhadas, a village in the Gurgaon district, 34 per cent of the cultivators in 1936 were tilling 2·5 acres or less. In the United Provinces, according to the provincial Banking Inquiry Committee, the average size of holdings diminishes as we go from the West to the East or from the South to the North. In the Southern tract it is 10·5 to 12·0 acres, in North Central 6·0 to 7·0 acres, in the South Central 5·04 to 5·5 acres, in the western 8·0 to 10·5 acres, and it is only

1. 'The Farmer—His Welfare and Wealth by Dr. M. G. Bhagat,' p. 93.

3·5 to 4·5 acres in the Eastern tract. According to a report by Mr. Shyam Behari Misra in 1924, the average area per ordinary cultivator varies from 18·83 acres in Bulandshahr to 10·2 acres in Meerut, 16·3 acres in Aligarh, 11·12 acres in Muttra, 7·0 acres in Fatehpur, 8·72 acres in Jalaun, 4·3 acres in Gorakhpur and 3·1 acres in Basti. A village survey of district Hardoi shows that 31·5 per cent of the cultivators cultivate an area of less than 3 *bighas*. In village Rudhi in Lucknow district 40 per cent of the holdings are of an acre or less each, while 90 per cent are below 5 acres each. In village Suraya in Mainpuri, about 18 per cent of the holdings are of less than 1 acre each and about 58 per cent. are under 5 acres. The average size for the province may be taken to be 6 acres. It is only about 4·5 acres in Bengal. According to the enquiries made by the Director of Land Records and Surveys for the Bengal Land Revenue Commission, covering 20,000 families in selected villages of each district, two-thirds of the families of agriculturists own less than 4 acres. The cultivated area per family varies from 8·74 acres in Jalpaiguri to more than 6 acres in Bankura, Birbhum, Burdwan, Jessore, Malda, and Nadia, a little less than 4 acres in Bakarganj and Faridpur, and about 3 acres in Dacca, Howrah, Noakhali and Tippera.

Sub-division of holdings has been a continuous process so that the size is being reduced each year, particularly during the last few decades. In Bombay, in village Pimpla Soudgar surveyed by Dr. Harold Mann, the average size has been reduced from 40 acres in 1771 to 7·0 acres in 1915. In Madras, a resurvey of a few villages originally surveyed under the direction of Dr. Gilbert Slater disclosed that the size of holding had been reduced. In one village there were 220 holdings of 1 to 5 acres each in 1916; these multiplied to 600 by 1936. Similar conditions prevail elsewhere. In the U. P. in a village in Mainpuri a survey disclosed the reduction of the average size from 11·7 acres in 1870 to 7·1 acres in 1940. According to the survey by Mr. A. D. Patel of the Borsal Taluka in the Bombay Presidency, the average holding has been reduced from 7 acres in 1901 to almost half, *i. e.* 3·8 acres in 1921. In Punjab, the average cultivated area per owner has likewise steadily decreased from 23·2 acres in 1913 to 20·2 acres in 1924-25 in Lyallpur, from 4·7 acres in 1890-91 to 3·7 acres in 1925-26 in Gujranwala, from 3·4 acres in 1899-1900 to 2·7 acres in 1929-30 in

[illegible] from 3·3 acres in 1899-1900 to 2·9 acres in 1924-25 in Jullundur, and from 15·8 acres in 1898-99 to 10·2 acres in 1934-35 in Hissar. Village surveys in other districts point to the same tendency of increasing sub-division and reduction in the size of holdings. The tendency is noticeable throughout the country.

Economic Family Holding.—The prevailing size of holdings is not necessarily economic for the average size of an agricultural family in India. According to Keatinge, an economic holding is one, 'which allows a man a chance of producing sufficient to support himself and his family in reasonable comfort after paying his necessary expenses.' He says, in the Deccan it would consist of forty or fifty acres of fair land with at least one good irrigation well and a house situated on the holding. Dr. Mann on the other hand holds that it should be enough to maintain a family at 'the minimum standard of life considered satisfactory.' The U. P. Banking Enquiry Committee fixes it in relation to the standard of comfort to which the cultivator is accustomed, and since this varies remarkably, it holds that 'the point at which a holding becomes uneconomic is not fixed but moveable. Nothing more is possible than to work out a complete set of 'average' or typical, economic circumstances, and to fix a point in relation to them'[1]. It goes on to say: 'it is scarcely an exaggeration to say that there are as many economic holdings as there are cultivators. An economic holding, in a word, is an economist's abstraction. It is an amalgam of averages, average distribution of soils, average cropping, average out-turn and prices, with an average tenant paying an average rent, possessing an average family, and incurring average expenditure. Yet some of these averages involve hopeless impossibilities[2]. The conception of an economic holding with reference to the standard of living of the worker is necessarily vague and is not capable of any definiteness or precision. A better way of approach would be to define an economic holding for a family as one which provides a remunerative employment to the members. Its size will still vary according to the level of wages outside agriculture, the nature of soil, the facilities for irrigation, nearness to markets, the types of farming, and the skill and efficiency of the cultivator.

1. Report Vol. 1, p. 24.

2. Report Vol. 1, p. 98.

Attempts have been made to calculate the size of an economic family holding with reference to the standard of living or comfort. The U. P. Banking Inquiry Committee has assumed the minimum holding necessary to support a cultivator and his family as follows:—

Minimum economic holding for the U. P.

	Meerut. Acres.	Jhansi. Acres.	Gorakhpur. Acres.	Lucknow. Acres.
Statutory	5·5	10·0	4·0	4·7
Occupancy	4·6	9·6	3·9	....

For Madras the minimum area required for the maintenance of an average family has been worked out as 5 acres, of which 2 to 3 acres must be wet land. 'It was estimated that 2·3 acres of average wet land would be just sufficient for the maintenance of a family, but that 2 acres of dry land would also be required for fodder and for other purposes[1]. The Land Revenue Commission, Bengal, has accepted 5 acres as the minimum required in province of Bengal to keep an average family in reasonable comfort; but if the land is capable of growing nothing but Aman paddy, the area required would be about 8 acres.

An economic family holding thus varies in size to a very great extent and the point at which a holding becomes sufficient for the family is always moving and is practically indeterminable. It serves no useful purpose except as a measure for over-population and pressure on the soil. It should however in no case be taken to determine the economic unit of cultivation.

Optimum Cultivation Unit.—There is a size below which a holding becomes too small for economic operations. If this size goes on increasing, a point is reached sooner or later, in particular due to the operation of the law of Diminishing Returns, when it becomes unprofitable to increase it any more. The optimum cultivation unit, therefore, is of a size at which the relationship between costs and

1. Report of the Land Revenue Commission, Bengal; Vol, II, p. 30,

yields gives the maximum of profits per acre to the worker. Its size is determined by the technique of production, the amount of capital invested, the efficiency of land and labour, the nature of production, and the capacity of the cultivator. From a national point of view, the contribution of the agricultural industry to the national dividend will be at its maximum when the average unit of cultivation is at its optimum. The optimum size is determined not only with reference to the present resources and capital invested in an industry, but after a full consideration of the reasonable prospects and possibilities at any future date. It is this size which a nation should strive to establish and attain to maximise its welfare. Such an effort in our country must imply the establishment of at least medium-size farms of several hundred acres, each with a full agricultural equipment, effacing completely the small-scale farming of the peasant. The present size, much below the optimum as it is, is not only uneconomic from the family standard of living point of view, but impedes all agricultural progress defeating all attempts to remove squalor and poverty from the countryside.

Causes of Sub-division of Holdings.—The present uneconomic small-scale farming has been brought about by a continous process of sub-division, which has been caused by the operation of several factors, the most important of which are given below:—

(*i*) Increased pressure of population on the soil has certainly been the most responsible factor, causing a reduction in the size of holdings. The increase in population without a corresponding increase either in industrial employment or in the area under cultivation, naturally resulted in multiplication of the existing holdings. Between 1891 and 1941 the population of the entire country has increased from some 279 millions to a little less than 389 millions. As for industrial employment, whereas there has been a marked decline of handicrafts, the employment in factory industries has been comparatively small. Agriculture formed almost the sole occupation of the masses of the population and a double tragedy resulted in that it also failed to expand. As has already been seen, the area under cultivation remained more or less fixed, so that the agricultural families instead of making new

holdings divided the original ones as the number of workers increased from generation to generation. A few of the non-agriculturists as well, having lost their original occupations in handicrafts, tried to carve new holdings out of the existing ones by offering tempting rents to avoid starvation. In brief, the failure of agriculture and industries to develop *pari passu* with the increase in population has been the most outstanding cause of sub-division of holdings.

(*ii*) Sub-division was further facilitated by the Hindu and Mohammedan laws of inheritance as administered by English Judges with emphasis on private property and individual rights. According to our inheritance laws all sons among the Hindus, and even other relations besides, among the Muslims are entitled to a share in property. The operation of such laws obviously causes much partition of agricultural land.

(*iii*) The dissolution of the joint-family system caused by the growth of the spirit of individualism, resulting on the one hand in jealousy and suspicion and on the other in the giving up of joint-cultivation has been accompanied by an increasing insistence on partition, usually by *metes* and bounds. The lapse of communal institutions has thus been a major force causing sub-division.

(*iv*) A lowering of the standard of farming caused by a deficit economy and poverty makes it easier to adopt farming as a profession. Sub-division thus facilitates further sub-division. Ordinarily the success of the fair-size holdings checks in itself the smaller uneconomic enterprises. But this holds good only as long as farming is an occupation requiring capital and organization. In India, it has become the profession of the capital-less, and as such the smaller the holding the easier it is to cultivate it. A poor standard of farming and a poor equipment cannot bring anything but a very small unit of cultivation. This is the inevitable result of the operation of the *Laws* of *Returns*.

Evils of Small-scale Farming.—Many of the holdings in the country are too small even for subsistence. The Land Revenue Commission, Bengal, reported that about half of the holdings in Bengal were barely sufficient for the maintenance of the families which own them. They found that in Bengal two-fifths of the agricultural families held an area of 2 acres or less, which was insufficient even for their maintenance. One-fifth of the agricultural population had just sufficient land for their maintenance in moderate comfort, but without any margin for unforeseen expenditure. Likewise, according to the U. P. Banking Enquiry Committee, a large number of holdings in this province are too small to support a cultivator and his family without some subsidiary source of income. On most holdings the cultivator can make both ends meet only in good years by un-remitting toil. Similar conditions hold good in other parts of the country. The small-scale farming in the country, therefore, means chronic indebtedness and a low standard of living among the agriculturists.

From the standpoint of production the average low size of holdings in the country has resulted in a deficit economy with high costs of production and low out put. Below a certain size there is no reduction in the fixed costs on a holding, so that the expenses of each unit of production rise with every diminution in it. To illustrate, at least a pair of bullocks has to be kept ordinarily by every cultivator. If the size of holding is adequate, these are fully utilized and the expenses on account of them are distributed over a considerable output. But a relatively small out turn has to bear all these expenses when the holding is small. There are more than 22 bullocks per 100 acres according to the census of 1940 *i. e.* al out 9 acres per pair. Almost about half as many would be sufficient for the efficient cultivation of all the cultivated area in the country, even with the present technique of cultivation, provided the holdings were not as numerous and small as they are. Likewise, there is waste in the employment of man power under the present small scale farming in the country. The cultivators over a majority of holdings remain under-employed with long periods of enforced idleness. Nevertheless, the expenses of production rise on account of the high portion of labour units engaged at present in agriculture. The cost per acre of fencing increases with the diminution of the area enclosed, and in many cases of small holdings become almost prohibitive

so that the fields in the country in general, lie unfenced and unprotected against the stray cattle, which not very un-often cause heavy losses. Even the variable costs do not vary in proportion to the variation in the size of the plot, and the small-scale cultivator stands to lose even in this respect. It has been noticed that both the rate of rent and interest rises as the scale of farming is reduced, and the petty cultivator, due to the operation of the long chain of middlemen and the very small-scale of his transactions, has usually to purchase from a dear market and sell his produce in a cheap one. The large-scale farmer can make certain economies by direct dealings in the market and commands a better credit. Very small scale farming, therefore, is wasteful and expensive. It also means, in general, a lower out put. The adoption of improved methods of cultivation, machinery and labour-saving devices is usually out of question for the farmer in India on account of the very small scale of his operations and the limited resources at his command. Even the permanent land improvements such as in the direction of irrigation, levelling and fencing, are beyond his capacity and the expenditure on these may be wholly disproportionate to the size of his field, even if he manages to have the means to effect the same. It will not be economical, for example, for the cultivator of 4 or 5 acres or even of 10 to sink a tubewell worked by mechanical power. The petty farmer cannot afford even to manure his neld properly. He has not enough land to grow a crop for green manuring, nor enough capital to apply manure from the market. The fields of the average cultivator in India, therefore, lie in a state of under-cultivation growing crops from year to year with little or no manure and water, and exposed all the time to the invasion of weeds, the raids of stray cattle and the depredations of thieves. The obvious result is that he gets a poor yield with a very high cost of production. The small size not only impedes all agricultural improvements but hinders the adoption of even intensive cultivation. Commercialization of farming is obviously out of question on holdings which are hardly sufficient even for subsistence. Mixed farming with dairying is in many cases impracticable where the holdings have not enough land to spare for the cultivation of fodder crops. All specialized types of farming require capital, which the small cultivator never has, so that small-scale farming is synonymous with the cultivation of cereals, which are less paying than the production of vegetables, fruits, eggs, butter or milk etc.

The combined effect of all these factors is that while the average size of holdings in India stands in the way of all agricultural progress in the future, it has resulted in a deficit economy at present. An official inquiry into costs and cultivation in the United Provinces reveals that the net income per acre falls as the size of holding diminishes, till at last in the case of holding of less than 3 acres there are considerable losses instead of profits[1].

Costs and Profits of cultivation in the United Provinces, per acre.

Size of holding.	No. of cultivators.	Percentage.	Expenses of cultivation.	Gross income.	Net income including wages of family labour.	Family labour per holding-man-days (3 women-days=2 men-days. 2 child-day=1 man-day.
			Rs. a. p.	Rs. a. p.	Rs. a. p.	
Below 3 acres	14	11·5	41 1 0	40 0 0	-1 1 0	150
3 to 5 acres	20	16·4	35 15 0	36 12 0	+0 13 0	184
5 to 10 acres	47	38·5	33 5 0	35 12 0	+2 7 0	267
10 to 20 acres	32	26·5	32 0 0	37 0 0	+5 2 0	358
Over 20 acres	9	7·1	32 5 0	40 5 0	+8 0 0	390
All groups	122	100·0	34 3 0	37 2 0	+2 15 0	274

The Farm Accounts published by the Board of Economic Inquiry, Punjab, point to the same results that the net income per acre decreases with diminution in the area of holdings and that under-employment or enforced idleness both of men and bullocks varies inversely with the size of holding. Obviously the expenditure per acre increases as the size of holdings decreases[2].

Remedial Measures.—Various attempts have been made to cope with the problem. The Royal Commission on Agriculture in India has referred to these attempts as follows[3]:—

'In the Punjab Canal colonies, subdivision has been checked by restrictions on alienation, and, in the case of certain grants, by the

1. Quoted in *Economic Problems of Modern India* by Dr. R. K. Mukerjee p. 111.
2. See for details *Farm Accounts in the Punjab* for 1938-39.
3. *Report* p. 136 *et. seq.*

limitation of succession to a single heir; so far as right holders are concerned, the policy has proved successful, but it has not served to prevent joint cultivation or even subdivision of cultivation,..... subdivision is retarded wherever restrictions on the alienation of land are imposed;..... It needs no argument to show that if the five million acres which non-agriculturists in the Punjab have acquired in the last eighty years had remained in the hands of the original owners, the average holding would be much higher than it is.'

'In Bombay, it was at one time thought that if partitions resulting in holdings below a certain limit were ignored in the revenue papers, this would act as a deterrent against such partitions being made in practice. This merely meant that Government did not recognise division of land beyond the fixed minima for the purpose of their record. The result, we were told was that, in a short time the records bore no resemblance to the facts, and the authorities had to adopt a completely new system of records'.....

'Mr. Keatings proposed to deal with the evil of subdivision of holdings by giving to right-holders in an 'economic holding' power to register it as such in the name of one right-holder only.....

'The draft Bill was purely a permissive measure'.....On registration as an economic holding' the holding became impartible, and not liable to further subdivision, and was to be held absolutely and in severalty by the one person entitled for the time-being .. ....

'In his evidence before us, Mr. Keatings maintained that there would not be any population displaced from the land, but that the land would be better tilled and better cultivated and for this more labour would be required. Some of those who otherwise might be owners would become labourers, but it would be mainly a change in status and not in occupation.....

'In the evidence given before us, no practical suggestion was put forward for the prevention of further subdivision, without interfering with the laws of inheritance.'

It has thus been suggested that subdivision may be checked by, the adoption of the Egyptian custom among the Mohammadans

whereby land is left actually in the hands of one heir to cultivate on behalf of all, and by joint farming of the inherited holding among the Hindus. Such measures are however not likely to be adopted until more occupations alternative to the cultivation of land become available.

In October 1927, the Small Holdings Bill was introduced in the Bombay Legislative Council with the object of stopping further sub-division of old fragments. Its consideration had to be postponed indefinitely on account of determined opposition to it in the Council.

Practically speaking, there has not been any effective solution of the problems of the under-sized holdings. So far our attempts have been based on the recognition of family cultivation units, individual rights in land and inheritance. The situation however demands far-reaching socio-economic changes in the basic structure of the life of our agricultural community. The main problem is that of the extreme pressure of the population on the soil, which can be relieved only by industrialization and agricultural expansion. Changes in our inheritance laws or restrictions on partition cannot create any employment either in industries or agriculture, and hence cannot effectively solve the problem of the under-sized holdings. Agricultural expansion itself is limited by the prevalent size of holdings and hence one of the obvious measures for it is the division of land into suitable farming units, which may permit economic operations. In other words, land has to be re-distributed in larger units, involving in some cases a combination of several hundred holdings. Such large-scale farming with the extreme pressure of population on the soil is practicable only either under collective or co-operative farming. Let us face the issue boldly by transforming the entire organization of our agriculture rather than take a retrograde step of creating economic units of family cultivation, which will neither be practicable nor are desirable, as they will still be too under-sized for economic farming and maximum productivity. Combination and redistribution of the present holdings into optimum cultivation units may not directly reduce the pressure of population per acre but shall undoubtedly, result in a much higher *per capita* agricultural income as cultivation becomes more efficient and intensive on account of it.

Extent of Fragmentation.—Another evil associated with our agricultural holdings is fragmentation, *i.e.*, the plots comprising a

holding instead of being in one compact block are scattered, separated by plots of others. It has been caused in holdings of the proprietors by the custom of usually dividing each plot at the time of partition due to the fact that land in general, varies in fertility and nearness to the village, by the expansion of cuitivation irregularly over the waste, by purchases and sales, and by the break-up of the joint family system. It is even more extensive in the holdings of the cultivators caused primarily by fragmentation of the proprietors' holdings and the small area owned by each on an average. Tenants cannot rent all they wish from single owners and so take individual plots, whereever available, either in the same or a neighbouring village. Fragmentation of the cultivator's holdings is an evil of the first magnitude. The size of the fields has been reduced throughout the country to small fragments. Dr. Mann found that in Pimpla Soudagar 62 per cent of the cultivators' plots were blow one acre, and in Jategaon the percentage was 31. In Bairampur, a village surveyed by Mr. Bhalla, 34·5 per cent of the cultivators had over 25 fragments each. It has been carried to ludicrous extent in some areas like Ratnagiri, for instance, where plots have been reduced even to the size of 1/60th of an acre. Such pocket handkerchief strips are common in all parts of the country. In village Suraya of Mainpuri, U. P., surveyed by Mr. Debi Singh, 8·5% of the fields are of less than ·1 acre and there are plots of even about 48 sq. yds. each. Most of the holdings consist of 10 to 15 plots scattered widely over the village area and the maximum distance between two fields in a typical holding is 12 furlongs. A survey of a typical village[1] in the Punjab shows that only 35·93 per cent of the cultivating holdings consist of single blocks and about half are of five or more plots. There were holdings even of more than 20 fragments each and fragmentation in this village had gone so far as to reduce some plots to 0·03 acres, which have perforce to lie uncultivated. In eight villages in Jullunder in the Punjab, the average field does not exceed one-fourth of an acre. In village Malehra in district Hardoi, the average size of a plot is about ·3 acres and 14 per cent of the plots are of about ·15 acre each[2].

Effects of Fragmentation.—The Madras Provincial Economic Council in 1928 concluded that, 'Excessive sub-division and frag-

1. 'An Economic Survey of Bhadas' 1936.
2. 'Fields and Farmers in Oudh edited by Dr. R K. Mukerjee.'

mentation, most prevalent in delta and irrigated areas, are by no means unmitigated evils. Paddy cultivation is best carried on in small plots to secure an even level over the whole land and one man's land is often split up into smaller plots for convenience of cultivation. The waste of cultivable lands used as bunds is thus an incident of wet cultivation and not due to fragmentation. Moreover, by not having all his land in one spot the cultivator has greater facilities for adapting his cultivation to the vagaries of the season and for maintaining an even employment of his time and labour through the cultivating season.' In brief, where there are great differences in the quality of the soil, moderate fragmentation enables the farmers to grow a variety of crops and to find more occupation for more days in the year than that available on a compact homogeneous block. The advantage is really great considering the climatic conditions in the country under which dependance on a single crop may expose an individual farmer all the more to the vicissitudes of the season. 'Indeed,' observes Dr. R. K. Mukerjee, 'it very often is forgotten that the peasant's holding is economic simply because the plots of lands are scattered in different soil blocks. Where agriculture is so dependent upon rainfall, the scattered distribution of the fields suiting different soil and climatic conditions is a great advantage[1].'

But where differences in the soil quality are not great or fragmentation is carried beyond a certain point, all these economies are lost. Thus Dr. Harold Mann found that, 'It has, in fact, all the evils of very small holdings in that it prevents the use of machinery and labour saving methods; and, on the other hand, of large holdings in that it hinders the adoption of really intensive cultivation by hand labour which is the greatest advantage of the small holder.' So, did Mr. Keatings find it in Bombay 'an unmitigated evil for which no advantage can be claimed.'

Fragmentation means waste of land firstly in the multiplication of field boundaries, secondly in the reduction of the size of certain plots into units too tiny to be cultivated at all. Consolidation work in Punjab revealed that 5 per cent of land was lying useless due to this latter factor alone, while one per cent was lost in boundaries that could be abolished on consolidation.

Fragmentation involves a greater expenditure of capital and labour and results in waste of time. According to the calculations

1. 'Rural Economy of India,' p. 31.

of Misra in the United Provinces, expenditure on the cultivation of land increases by 5·3 per cent for every 500 metres of distance for manual labour and ploughing, from 20 to 35 per cent for transport of manure, and from 15 to 30 per cent for transport of crops. Fragmentation thus, obviously, adds to the expenses of cultivation and therefore diminishes the net yield.

Fragmentation makes it impossible either for the cattle or for the cultivator to live on the farm. The absence of the former results in much waste of the farm-yard manure while that of the latter prevents an efficient watch and organization. Both cause leakage in the agricultural yield.

The sinking of a well for each separate plot cultivated by an individual becomes an impractical proposition. It may be possible to have a well for a compact holding and thus the scattered cultivation of small fields stands in the way of irrigation. Fragmentation makes irrigation impracticable in another way as well—it may not always be possible to carry water through another man's fields and thus even when water may be available, plots may lie dry due to this difficulty.

It impedes efficient cultivation, and while the outlying fields are liable to be neglected, there is the impossibility of using, in general, modern implements and improved methods of cultivation so long as the plots are tiny and scattered.

Not very unoften, fragmentation leads to litigation and endless quarrels on account of disputes and rights of way. In other words it accentuates the disruption of the village community.

Finally, fragmentation stereotypes the present inefficient system of cultivation, as a cultivator has to grow what others grow. The type of farming in scattered plots is after all determined by tradition and custom. Specialized types of farming, such as dairying and gardening, are practicable only when a holding is compact, having a home and farmstead on it and protected by a proper fencing.

To sum up, in the words of the Royal Commission on Agriculture, 'fragmentation involves endless waste of time, money and effort; it restrains the cultivators from attempting improvements; in enforces uniformity of cropping, and especially restricts the

growing of fodder crops in the period, when cattle are usually sent out to graze on the fields.[1]

Remedial Measures:—The most usual remedy for fragmentation has been consolidation. The work originated in Punjab in 1920 and the main line of approach was co-operative. Redistribution of holdings was effected by voluntary exchange through a co-operative society with the consent of all the owners concerned. Surveyors and inspectors were appointed in selected villages, who tried to bring about consolidation of holdings by persuasion and propaganda. In the beginning, progress was slow and in the first ten years only about 263,000 acres were consolidated at an average cost of 2/5/- per acre. The movement however gathered momentum later on, and the total area consolidated till 1941 in Punjab was about 4 per cent of its total cultivated area, *i.e.*, 1·13 million acres. The cost of cultivation has also been brought down to about Rs. 1/10/- per acre, at an average, out of which the tenants have to pay eight to ten annas. Co-operative consolidation of holdings has effected some 77,672 *pacca bighas* of land in the United Provinces as well. The Government Review for 1938 on work done by the Co-operative Societies claims that consolidation of holdings 'challenges comparison with any co-operative achievement in Europe,.....No greater benefit has been conferred on the Punjab peasant since the war of 1914'. It has increased the sinking of wells and has brought some waste land under cultivation, increasing the actual cultivated area. After consolidation there has been a general rise in the standard of cultivation and farming has become more intensive. It has given a new outlook on life and has increased, in general, agricultural prosperity. The Government has also shared in the benefits by increasing its revenue demand. In Jullundur alone the land revenue of three consolidated villages rose by Rs. 1,400 as a result of consolidation. But co-perative consolidation is dilatory, may have to be abandoned at the last moment due to the obstinacy of one or two individuals and is usually very difficult to carry out without uniformity of soil, irrigation facilities and rights in land. There are technical difficulties as well, and underlying all is the peasant's passionate love of his land. Co-operative consolidation has been facilitated in the Punjab by comparative homoge-

1. Report p. 135.

neity of soil and by simplicity of tenure. It is however confined to the right-holders' holdings only.

Co-operative consolidation has not taken any firm root in other parts of the country, and even in the Punjab the movement had to be supplemented by the passing of the Consolidation of Holdings Act in 1936 to surmount the difficulties experienced in the course of the work. It has given powers to the consolidation officers to compel the small and stubborn minority. The C. P. however, was the first to make provision for compulsory consolidation of holdings. According to an Act passed in 1928, any two or more permanent holders in a village, holding not less than two-thirds of the occupied area may agree to a scheme of consolidation, which becomes binding on all after confirmation. 5,00,000 acres of land have been consolidated under the Act at an average cost of about -/4/- per acre. An Act has also been put on the statute-book since 1939, which authorizes the Revenue Department to start consolidation work in any village on the application of tenants cultivating not less than one-third of the area in the village. Among the major states, Baroda (which was the pioneer in the field) passed the Prevention of Fragmentation of Agricultural Holdings Act in 1933, which gives neighbours and coparceners the right of purchase of the adjoining lands. In Indore, the Tenancy Act provides some facilities to tenants to exchange their lands with a view to make the holdings more compact. With regard to applying compulsion for consolidation the Royal Commission on Agriculture stressed the need for great caution. It reported: 'When all that persuasion perseverance and skill can do has been exhausted, and a beneficial scheme of consolidation has been completed, we think that compulsion may be applied to secure for the majority advantages which an obstinate minority might otherwise withhold.'

Is consolidation really so beneficial as to be effected even with compulsion? The C. P. Government pleads that consolidation stimulates improvements in lands, economizes time and labour, secures better treatment of the outlying fields, makes watch easier and cheaper, minimizing damage by stray cattle, facilitates the cultivation of improved varieties, reduces disputes, makes irrigation easier, increases from 5 to 10 per cent. the gross produce of the crops, makes room for more intensive cultivation, augments the supplies of manure, releases much cultivable land from the field

boundaries, facilitates the introduction of improved implements and in general results in better farming. Its limitations are that it is too expensive and costly and even impracticable where soils are not homogeneous and tenures simple. Its results may be nullifield by the mere lapse of time due to the operation of the laws of inheritance, partition and sales. An enquiry made by the Reserve Bank of India, revealed that, 'consolidation is no longer a live issue; so far as most Governments are concerned it has been buried and shelved long since'[1]. In Assam fragmentation is not considered to be a pressing problem, in Bengal the reluctance of landlords and tenants to exchange their present plots is regarded as an insurmountable obstacle, in Bihar consolidation is considered impracticable, in Sind fragmentation is not considered excessive and in Madras the methods followed in Punjab are regarded as unsuitable. The fact is that consolidation confers many real advantages, but which pale into insignificance due to the very low size of the average holdings in the country. Consolidation of the uneconomic holdings may make them a little more paying than before, but the establishment of these holdings whether in a scattered or a compact block is to harbour an economic evil of the first magnitude. It therefore, serves no useful purpose to consolidate holdings, which do not permit operations on an economic scale. Moreover, the consolidation of the right holder's holdings has no agricultural value while that of the cultivators' holdings is not practicable without proper land reforms.

Another remedy, perhaps more practicable and useful under the present conditions, is the consolidation of cropping. It has been applied with success in certain villages by the agricultural department in the United Provinces. It implies the cultivation of the same crops in contiguous fields by the different cultivators converting different portions into single farms in appearance. The individual retains his plot and farms it as a separate unit. The immediate advantages are the prevention of theft and cattle trespass, introduction of better seeds, fertilizers and implements, and a proper utilization of the facilities of irrigation. It has been of great help in demonstration of improved methods of cultivation and in the building up of a better village practice.

1. Proceedings of the First Conference of the Indian Society of Agricultural Economics. p. 30.

Consolidation of cropping is even more welcome on account of the promise that it has for the future. It can easily be used as a nucleus of that type of co-operation in a much wider sphere, which is called forth by small-scale farming for its success. To begin with, close association in growing the same crops will invariably result in co-operation in the routine of agricultural operations even though each individual may be working his separate unit. The next stage will be the co-operative ownership of the costly yet more efficient implements. This in itself will teach the wisdom of removing all field boundaries within a crop block to facilitate the employment of heavy mechanical appliances, which cannot be admitted in small plots. At this stage, though the field distinctions will be obliterated, the share in the farm produce may be governed by the original area held by each individual in each block. It will also imply a contribution of labour according to his original area by each individual. Finally, an entire village may become a single unit of cultivation under the collective management of the agricultural workers of the village community, where each will have a share of the total produce according to the work units contributed by him. It is such a rearrangement of the agricultural holdings, which will increase the area under cultivation by bringing much waste land under the plough and by releasing it from the multitudes of the unnecessary plot boundaries; and which will introduce better farming, scientific cultivation and improved technique aud implements, considerably rasing the yield from the land by changing the nature of production and by increasing the intensity of cultivation. Such farming units alone can be entrusted with execution of an agricultural plan under the supreme direction of the State. No true planning of agriculture, therefore, in the country, can succeed without making provision for the abolition of the present agricultural holdings and their combination into proper economic units.

CHAPTER V.

Rights in Land, Revenue and Rents.

Historical Survey[1]:—The ruling Power in India has always held itself entitled to a certain portion of the produce of every acre of land, and a triple system, in which the cultivators, the landlord and the State, have rights in pand is now widely recognised in the country. In the early Hindu period the King was not the proprietor of the soil for the land belonged to the person, as Manu said, who cleared the jungle and brought it under cultivation. He was however entitled to a share of the produce for meeting the common expenses of the community. A regular system of survey settlement and assessment prevailed in the Maurya Kingdom of Chandra Gupta. In Punjab, Oudh and Southern India at least, the land belonged jointly to the village community. The communal ownership of the land was perhaps never fully established in Bengal, where the land belonged to the original cultivators. The rights of the village community gradually weakened with the lapse of time and by the time of the Moghul conquest the State right had been magnified into a general superior ownership of the entire domain. These were not necessarily antagonistic to the concurrent, hereditary, permanent and long established rights of the tillers of the soil. The Mughals interfered little with these rights and the old chieftains were allowed to collect and transmit Khiraj or land revenue from areas under their control. In Akbar's reign, Raja Todar Mal introduced a detailed system of assessment based on actual produce of the soil. Payments in cash however, were encouraged.

During the early British period, after the Company obtained the Diwani of Bengal, Bihar and Orissa in 1765, the old system was retained for a few years. In 1772, the Court of Directors decided to make direct collections and completely ignoring the rights of the zemindars, settlements were made by auction to the highest bidders for a period of 5 years. There was over-bidding and estates were soon left in an exhausted condition. The enactment of Pitt's India Act in 1784 was followed by extensive enquiries regarding the rights of *zamindars* and *raiyats* and culminated in the well known controversy between Grant and Shore.

1. See Indian Land-System by Dr. Radha Kumud Mukerjee in Report of the Land Revenue Commission Bengal. Vol. II p. 129-240.

Grant maintained that the zamindars were nothing more than agents for collecting the revenue; while Share held that they had limited proprietary rights. As a matter of fact, there were at this time different classes of revenue payers, consisting of the original independent chiefs, the old established land-holding families, the collectors of revenue inducted by the Mughals and whose office had tended to become hereditary, and the revenue farmers created by the Company. In brief, there were three parties interested in the land—The State, which was entitled to a share of the produce but never, in practice, claimed any actual proprietary rights in the soil; the zemindars responsible for the collection of revenue and having no absolute right of property in the soil; and, the *raiyats* with heritable and even transferable rights, paying a customary rate of rent.

British Settlements:—These may be grouped under three main types,[1] *i.e.* (1) Settlement for single estates under one landlord comprising the Permanent Settlement of Bengal and North Madras, the temporary settlement of estates in Bengal and settlement with Taluqdars in Oudh; (2) 'Mauzawar' or 'Mahalwar' settlements for estates of proprietary bodies, usually village communities including the settlements of U. P., C. P. and Punjab; and, (3) settlement for individual holdings as in the Raiyatwari system of Madras, Bombay and Berar and the special systems of Burma, Assam and Coorg. The former two can conveniently be grouped under the zamindari Tenures, under which revenue is assessed on an individual or community owning an estate and the land is held as independent property. Under the Ryotwari tenures, the revenue is assessed on individual fields and the land is held of the Crown by the occupants in a right of occupancy, which is both heritable and transferable. There may be rent-paying subtenants or tenants under either system. In the landlord settlements, the landlord has a legal proprietary title together with a fixed responsibility for the payment of the revenue on the estate for the whole term of settlement. The occupant in the raiyatwari settlements is not so bound by a lease or contract, the revenue being assessed on the particular fields he holds he can relinquish his holding or any part of it at the close of any year.

A more convenient distinction is that between the permanent and temporary settlements. The former have been made once and

1. "Land Revenue in British India by Baden Powell" p. 148.

for all—the land revenue is never to be increased or reduced. Permanent settlement was made without any demarcation of boundaries, without any survey of land, and without any attempt to value the land in detail or to record rights. Under the temporary settlement the assessment is revised after a certain period of years. It consists of (1) a complete survey of the land, demarcation of boundary lines and classification of soil; (2) preparation of the list of the revenue payers and their holding, a schedule accounting for every field and plot of land, and other statistical tables and returns; and (3) a valuation of the land, the fixation of revenue rates and the sum payable by each estate or holding. The cadastral record and record of rights are preceded by a cadastral survey work and the preparation of a map for each village. This is based on a field-to-field survey after which a record of holdings is drawn up, which is usually revised each year. The assessment is then fixed on each field under the raiyatwari system and for each estate or village under the zamindari system. The revenue demand remains fixed for the period of the settlement. Leaving aside, Bengal, Benares in the U. P., and certain portions of the Madras Presidency, which are permanently settled and make up altogether about one-fifth of British India, the rest of the country has temporary settlements.

The Permanent Settlements: The Permanent Settlement of Bengal was made in 1793 with the primary object of reorganising the revenue administration to safeguard the punctual receipt of the land revenue under the auspices of Lord Cornwallis. It was made with the zamindars and the revenue was fixed at ten-elevenths of the assets. The State demand was fixed for ever and the zamindars were declared to be the proprietors of the soil entitled to all increment that might be derived from the extension of cultivation or other causes. The collection of revenue was not to be suspended for any cause whatsoever and estates were liable to be sold for arrears. The Permanent Settlement was extended in 1795 to the then Benares province *i.e.* the present districts of Benares, Ballia, Ghazipur, Jaunpur and the northern part of Mirzapur. The Permanent Settlement of 1793 in Bengal did not include the unoccupied estates and waste lands. The landlord settlements in Madras were also made on the basis of fixing the land revenue for ever. In that province, it was only in the northern districts that there were chiefs or zemindars. No other real landlord estates existed

and hence after an abortive attempt to extend the Permanent Settlement the rest was settled under a separate system. The main features of the Permanent Settlement have remained intact till today.

In 1900, Mr. R. C. Dutt advocated the extension of the Permanent Settlement throughout India and claimed that its extension 40 years ago to other parts would have prevented famines there. He put forward the case of Permanent Settlement by stating that in Bengal, the cultivators were more prosperous, more resourceful, and better able to help themselves in years of bad harvest, than cultivators in any other part of India; that it had fostered agricultural enterprise, extended cultivation, helped the accumulation of private capital, which was eventually devoted to industries and to public works and institutions. The memorandum on the Land Revenue Policy of the Indian Government issued in 1902 by the Governor-General-in-Council, on the contrary, held that there was no ground for the contention that Bengal had been saved from famine by the Permanent Settlement. It proceeded to say that there was still less ground for the contention that the position of the cultivators had been converted into one of exceptional comfort and prosperity owing to the Permanent Settlement. Under Permanent Settlement, it pointed out, 'the evils of absenteeism, of management of estates by unsympathetic agents, of unhappy relations between landlord and tenant, and of the multiplication of tenure-holders, or middlemen, between the zamindar and the cultivator in many and various degrees, are at least as marked and as much on the increase there as elsewhere; and they cannot conscientiously endorse the proposition that, in the interests of the cultivator, that system of agrarian tenure should be held up as a public model, which is not supported by the experience of any civilized country, which is not justified by the single great experiment that has been made in India, and which was found in the latter case to place the tenant so unreservedly at the mercy of the landlord that the State has been compelled to employ for his protection, a more stringent measure of legislation than has been found necessary in temporarily settled areas.' [1]

The entire question was recently examined by the Land Revenue Commission Bengal, which reported in March 1940. They

[1] Land Revenue Policy of the Indian Government p. 7.

found[1] that under Permanent Settlement land revenue had remained almost entirely inelastic for 150 years and the benefit of more valuable crops and higher prices had either gone to the landlords or to the tenants. The unearned increment too has been appropriated by a few individuals and the mineral resources have also been developed for the benefit of the individuals. The annual loss to the State has been estimated at anything between Rs. 2 crores and Rs. 8 crores. It has been argued, that due to the low land revenue assessment the distribution of wealth has been so wide, that the Government has gained more than it has lost, from other taxation which it has been able to levy. The income from court-fee stamps is very much greater in Bengal than anywhere else but it is not a good thing that a large share of revenue should be derived from litigation. As far as income from other indirect taxes is concerned although, the profits from land, which would otherwise have gone to the State, have been widely distributed under Permanent Settlement, individually the income from agricultural sources has never been sufficient to contribute substantially to these taxes. Government has of course been saved the trouble of collecting the rents and its revenue has been secured, while it has been saved from the operations of the periodic revisions. But it has at the same time resulted in certain administrative disadvantages such as the absence of record of rights until the beginning of this century, lack of knowledge of local conditions and customs on the part of the Government officers and postponement of measures to improve the lot of the cultivators until agrarian disorders forced the issue. Permanent Settlement encourages subinfeudation and brought into existence a body of tenure-holders vastly out-numbering the original zamindars. It has thus been indirectly responsible for the social and economic progress of Bengal. But other provinces not enjoying Permanent Settlement have not lagged behind. On the other hand subinfeudation, which has created a chain of middlemen not uncommonly consisting of 15 to 20 tenure-holders has severed the connection between the zamindars and raiyats, preventing the former from fulfilling the functions, which provide an economic justification for a landlord and tenant system. Land is obviously nobody's concern. Financially, the Permanent Settlement has deprived the Government of a fair share in the produce of the land, by fixing it in perpetuity, has involved the Government in loss of revenue

1. Report Vol. 1, Chapter II.

from minerals and fisheries, and has thrown an undue burden on other classes of tax-payers. This has contributed to the over-capitalisation of rent-receiving as opposed to productive purposes either in agriculture or industry. Economically, 'it has imposed on the province an iron framework which has had the effect of stifling the enterprise and initiative of all the classes concerned..... ....It is not too much to say that the extent of sub-infeudation has become an incubus on the working agricultural population, which finds no justification in the performance of any material service so far as agricultural improvements are concerned, and fails to provide any effective means for the development of the resources of the land, which is the greatest asset of the province.....There has been little inducement to spend public money on agricultural development, when the benefit of the improvements goes into private hands.....

'The truth is that the present situation, while containing some of the features of both the landlord and tenant and the peasant proprietorship systems, possesses most of the disadvantages and few of the advantages of either system. Under it the actual cultivator has too often the worst of both worlds.'[1]

The majority of the Commission therefore held that 'the Permanent Settlement and the zamindari system should be replaced by a raiyatwari system, under which the Government will be brought into direct relations with the actual cultivators by the acquisition of all the superior interests in agricultural land.' So far no action has been taken to implement these recommendations and the system today is the same, which was imposed more than 150 years back.

Settlements in the United Provinces: The temporary settlement as developed in the Agra province, is the typical form extended to other provinces having village communities with landlord rights. Under these settlements the joint body of cosharers is regarded as responsible for one assessed sum of revenue. Almost the same system applies to single landlord estates as in Oudh Taluqdari settlements. According to Regulation VII of 1822, which applied to the then North-Western Provinces and Orissa, settlements were made either with single landlords or zamindars or with joint bodies of cosharers of the villages. In the Taluqdari villages, there was a

1. Report the Land Revenue Commission—Vol 1. p. 39.

system of double-tenures, fixing what a village was to pay to the landlord and what was to be the share of the Government. The revenue demand was fixed for a period of years only and it was an entire estate, village or *pati*, which was assessed. In villages which were held by a body of cosharers or by the *Bhaichara* communities, the settlement was with the entire body as a jointly and severally responsible unit. A 'Lambardar' was chosen from among the cosharers to be primarily responsible for the payment of revenue to the Government. The burden of revenue was distributed among the co-sharers according to their respective rights in the estate. If a sharer did not like joint responsibility, he was at liberty to have a 'perfect partition' getting a separate estate with separate revenue liability. The characteristic features of the settlements are the same even today except that, the share of the State, which was two-thirds of the assets until 1855 has now been reduced ordinarily to 40 per cent. It is however, the maximum and the revenue may in a few cases be as little as 25 per cent. At present, out of the recorded assets of Rs. 17·66 crores the revenue is Rs. 7·11 crores. The majority of the proprietors hold small estates, the average area per proprietor is rather less than 30 acres. More than half of the 12·25 lakhs of proprietors pay less than Rs. 24 as revenue, while only about 1·25 lakhs pay more than Rs. 100. Yet it should not be construed to mean that the province is one of peasant-proprietors for proprietors' own cultivation amounts to about 19 per cent only and one-fourth of the total land revenue is paid by some 8000 persons paying more than Rs. 1000 each. The revenue, which was revised at intervals of 30 years prior to 1929, is now revised after 40 years since that date.

Settlement in Punjab: Based on the U. P. model, the Government demand is assessed on an estate as a whole, usually a village, and since in Punjab, the organisation of the proprietors of land into village communities has existed from time immemorial, the land-holders in a particular village are made jointly liable for the payment of land-revenue. In some cases, all the proprietors have an undivided interest in all the land while in others, the proprietors have their own separate holdings in the estate although some land may still be held in common. Where the rights and liabilities are determined according to certain known shares, the tenure is known as *pattidari*; where possession is the measure of each man's right and liability, it is called *bhaiyachara*. The State's share since 1928

has been reduced to one-fourth of the net assets and a revision of settlement takes place after 40 years. Punjab is, in main, a province of peasant-proprietors, 44 per cent of the cultivated land being cultivated by the proprietors themselves; and yet 47 per cent is cultivated by tenants-at-will, and 7 per cent only by occupancy tenants. The number of big landholders is comparatively small, those paying more than Rs. 500 as revenue being only about two thousand. Twenty per cent of the land owners hold less than one acre each and many more, including these, have not sufficient land even for the maintenance of their families.

As contrasted with the zamindari areas, where the dominant feature is the triple system, are the *ryotwari* areas of peninsular India, in which the intention of the settlement was to eliminate the rentier middleman.

The Ryotwari System of Madras:—In 1820, the ryotwari system was finally established in Madras. 'It means the division of all arable land whether cultivated or not into 'fields' and the assessment of each 'field' or group of fields at a fixed rate for a term of years. The 'field' is an arbitrary area.....The occupant pays the revenue so assessed on the area he actually occupies. This area may be constant, or may be varied from year to year by the relinquishment of old fields and the taking up of new. The occupant deals directly with the Government and is responsible for no one's revenue but his own... The occupant thus enjoys all the advantages of proprietorship, subject only to the payment of the revenue due on the lands held during the year. The lands can be inherited, sold or burdened for debt in precisely the same manner as a proprietory right'[1]. The revenue assessment is revised after a period of years. The other main varieties of land-tenures under the Government in Madras are perpetual freeholds, enfranchised inams, zamindaries, unsettled palayams, inam holdings including jagirs, and land held on special conditions.

The Ryotwari System of Bombay:– The land assessment is placed as in Madras upon separate holdings of the individual ryots, who pay revenue directly to the Government. It is claimed that by division of the whole cultivable area into units of assessment, the extension of cultivation results simultaneously in

1. Land Revenue Administration in India by S. C. Ray p. 65.

an increase of revenue, while the ryot has the facility to ease his burden by giving up the occupation of lands unprofitable to him. Under the old tenure system the occupant holds the land with full rights of disposal either by sale, mortgage, lease or other form of transfer subject only to the payment of the Government assessment. Under the new Tenure introduced in 1901 freedom of transfer has been restricted. Besides these two main types of tenures in Bombay there are the Inam and the miscellaneous tenures.

In general, even the ryotwari tenures have tended to degenerate into a triple system and the emergence of a rentier class has been a marked feature of recent times. Throughout the country therefore, cultivation has been left, in main, to the tenants, a class impoverished by the burden of rentiers through rack renting, having little or no capital to carry on efficient farming. In the absence of the middlemen, the standard of cultivator rises under conditions, which are conducive to the progress of both intensive and extensive cultivation. No attempt has however been made to modify the system of land settlements to meet the requirements of a growing population. Tenures have remained in essence the same as they were, when introduced in the beginning, either in the latter part of the eighteenth or the early period of the nineteenth century. Obviously, they must have outlived their utility. The iron frame work of these old land-tenures impedes the way of all agricultural progress. Our policy in this respect requires a reorientation to respond fully to the demands for agricultural expansion. After the Great War, many of the countries in Europe have gradually eliminated the middlemen rentier to maximise their agricultural production while in U. S. S. R. private possession of the soil is now an obsolete notion.[1] Farming to be effective has to be carried on a co-operative or collective basis and has little room for a non-cultivating proprietor of the land. Really speaking there is no room whatsoever for any type of private ownership of agricultural land.

Assessment of Land Revenue:—It has already been noticed that at the time of the Permanent Settlement the Government demand was fixed at ten-elevenths of the assets but no cadastral survey and records of rights were prepared. In the temporarily settled areas

1. The Land Tenure System in Europe, League of Nations.

assessment of land revenue is revised after a definite period of years and the settlement is an elaborate process necessitating a field-to-field survey, preparation of the cadastral record etc. Under the zamindari system, the demand is assessed on the village or estate, while in the ryotwari tracts the assessment is on each field as demarcated by the cadastral survey. In the former the land revenue is a definite sum payable for the estate for a fixed term of years. In the latter, assessment takes the form of revenue rates for different classes of land, which are settled for a term of years and the total sum payable by a ryot differs from year to year according to the area he holds. The revenue is assessed throughout the country, except in Bombay, as to represent a share of the net produce in the ryotwari areas and net assets in the zamindari areas. The meaning of the term 'net produce' or 'net assets' is not the same in all the provinces. For the country as a whole the standard share of the calculated net assets or produce to be taken by the Government is less than one half. Provision has also been made in the various provinces for exempting from assessment, generally, increases of incomes due to improvements made by private individuals, for the avoidance of sudden enhancements of the revenue demand, for the grant of favourable terms to cultivators, who take up and clear waste land, and for the relief of over-assessed holdings. In general, the assessment is a fixed cash demand, representing in theory a revenue, fairly payable on an average of a series of seasons, although suspensions and even remissions are made in years of rainfall failures. In precarious tracts, assessments fluctuate according to the areas sown or matured in each harvest.

Entering into details, we find, that in Punjab, at the time of Settlement a number of villages more or less of the same character comprise an assessment circle. Soils in each circle are then classified and an estimate of the matured area of each class is made on the basis of a typical period of 5 or 10 years. The average yield of all the principal crops is then found out through crop experiments and this when multiplied by the matured area gives the total yield. The average prices in the past, generally during the entire period since the last settlement excluding the periods of the famine or severe scarcity, are calculated after making an allowance for the cost of cartage to markets. The current prices are also ascertained and commutation prices are selected with reference to both. The next step is to obtain the cash value of the various crops. In

Punjab, the assessment is based on the assumption that all land is sub-let on the *batai* system. To calculate the net assets therefore, out of the gross assets so obtained deductions are made first for the menials' expenses. Half of the remainder represents the landlord's share. Various adjustments are then made to find his net assets *e. g.* deductions for any part of the seed supplied by the land-holder or for the payment of any part of water rates etc. The Government claims one-fourth of the resulting figures, which are taken to represent the landlord's net assets. It is in this way that the revenue for each assessment circle is fixed; it is then distributed over the villages or estates. After the assessment of each village the rates may be readjusted according to the quality of each class of land or a flat rate may be applied irrespective of the classification of land. Alternatively, a flat rate may be applied to particular classes of land. Prior to 1928 the Government share was half and yet it is remarkable, that in spite of its reduction now to one-fourth, land revenue has not appreciably decreased. Since 1937, a sliding scale has been introduced to adjust land revenue payable in any given year in relation to the prices current in the preceding year. The sliding scale operates downwards only and the Government cannot get any advantage, if the price level is above the commutation figures at the time of settlement. In general, land revenue together with the local rates and *abwabs* represents about 13 per cent of the gross produce. In addition, water rate is payable in canal irrigated areas. In the case of ordinary and extra-ordinary calamities remissions and suspensions of revenue are allowed. The average incidence of revenue works at Rs. 1·9 per acre varying say from annas 4 per acre in the unirrigated areas to Rs. 6-6-10 for good irrigated land in Lyallpur district.

In the United Provinces, after the completion of the cadastral survey and record of rights, the Settlement Officer goes to classify soils in each village according to productivity. There may be about 5 or 6 classes and each class is given a figure to represent its comparative value with other classes. The assessment is based on assets consisting of rents, produce from the proprietors' land, and *siwai* income. To find out the fair average rent paid for each class of soil, holdings lying within each class are picked out for averaging the rents after excluding obviously the very high or too low rates. The pitch of rents since the last settlement is also examined and a fair average rent is determined for each class after taking

into consideration the relationship between the movements of rents and prices as well since the last settlement. Rents may also be increased or reduced during the operations by the Settlement Officer. After having ascertained the fair average rates of rent for each class, a general check is applied with reference to the gross-produce and under the rules the rates should not exceed one-fifth of the estimated gross produce. The assets of the proprietors' *khas* land are then calculated and the total assets are obtained by adding the rents and *siwai* income to these. Government share is then fixed normally at 40 per cent of these assets but may be even as low as 30 per cent if the number of proprietors in a *mahal* is large and their circumstances are poor. Enhancement is limited to one-third of the previous demand unless it be less, even after such increment, than 30 per cent of the assets. Remissions in revenue were allowed during the period of the slump for the fall in prices and a suspension or remission takes place in years of agricultural calamities. The incidence of revenue is at an average Rs. 2·1 per acre while it is only Rs. 1·5 per acre in the permanently settled areas of the province.

In Madras, soils at the time of settlement are classified into various kinds according to their productive capacity first into the well-known series and then into sub-classes with reference to the amount of the clay or sand and experiments are carried out to find productive capacity. As a result of these experiments, the normal yields per acre for the various kinds of soil are ascertained. These grain out-turns are converted into money values at the average of the prices of twenty non-famine years immediately preceding the settlement. Deductions are then made to find out the net produce— 10 per cent to 27 per cent is deducted for cartage and merchant's profits and 6¼ per cent to 25 per cent tor vicissitudes of seasons and unprofitable areas. Cultivation expenses for seed, ploughing cattle, agricultural implements, manure and labour are then carefully calculated in terms of money and deducted from the figures previously arrived at. Fifty per cent of the net profit per acre thus arrived at is claimed as the Government maximum share. In case. of lands, which are dry or far from the market or roads or have an insecure water-supply the assessment is less than 50 per cent Improvements made by a *pattadar* are exempted at the time of re-settlemeut. Enhancements since 1924, have been limited to a maximum of 18¾ per cent. The average rate of assessment works

out to between Rs. 7 and Rs. 8 per acre for wet land and Re. 1 to Re. 1-4-0 for dry land—the average for both being Rs. 2-9-0 per acre.

In Bombay, land is first classified into groups on a consideration of configuration, climate and rainfall, markets, communications, standards of husbandry, population and supply of labour, agricultural resources and progress during the last 30 years etc. The second step is the fixing of the standard rates for each group *i. e.* the normal assessment per acre on land in that class of 16 annas classification value. According to the Bombay Land Revenue Code (Amendment) Act 1939 the rental value has been formally adopted as the basis for fixing the maximum assessment. Rental value means the consideration 'for which land is or could be leased for a period of one year for its most advantageous use'. The final step is the working of the 'aggregate to detail' with the help of the 'annawari' classification of the soil based on the various factors. Private improvements are exempted and enhancement at the time of a revision of a settlement is limited to 25 per cent on the total for a whole Taluka and a group, and 50 per cent on that of a village, and survey number or sub-division.

One of the commonest criticisms against the land revenue assessments in the country is that it does not take into consideration the peasants' ability to pay.[1] It has been suggested that while the uneconomic holdings should be exempted from land revenue the larger holdings might be subjected to a scheme of progressive taxation. The Congress Government in the United Provinces had under consideration a measure, which was calculated to reduce the incidence of revenue payable by the smaller landlords and to introduce a kind of gradation in the percentages paid by the smaller and the bigger landlords as land revenue. The question whether a practical scheme can be devised by which the principles of income-tax assessment can be applied to the assessment of land revenue was referred in Punjab in the year 1937 to a Land Revenue Committee. It came to the conclusion that any scheme of the exemption of uneconomic areas from land revenue would be impracticable. On the analogy of income tax, all land-holders paying less than Rs. 500 as land revenue would be exempted and the revenue would be reduced from Rs. 4½ crores to Rs. 30 or 40 lakhs.

1. "Land Problems of India by Dr. R. K. Mukerjee," Chapter XVI.

In France exemption of holdings paying less than 10 francs (equivalent of Rs. 5) was attempted in 1898 but had to be abandoned as a failure. In Punjab such an exemption would mean a leakage of Rs. 32 lakhs in income from land revenue. Moreover, since land has a monopoly value, it should not be exempted in any case from the payment of revenue to the community. Further, if the exemption limits were to be kept at Rs. 5, it may benefit 1·75 million holders but only to the extent of about Rs. 2 each. It will therefore be of no practical use. Exemption will promote partitions, many of which would be fictitious, and thus increase the number of uneconomic holdings. It may therefore, have a boomerang effect. To make the system more equitable however. the Committee recommended a graduated relief to the small land owners, cultivating their own land and proposed a surcharge on land owners paying more than Rs. 250 as land revenue. The scheme deserves consideration in all parts of the country and the principle of progression should be introduced without delay in the assessment of land revenue. Simultaneously a surcharge should be imposed on all non-cultivating proprietors pending their final elimination.

Again, the periods of falling prices, except for the *ad hoc* measures taken during the period of the slump, have not been associated with reductions in the revenue demand nor has the increase in land revenue been co-extensive with the rise in prices. The revenue demand has moved up like a balloon irrespective of the price pressure on it. The fixation of revenue demand for a definite period of years further acts as a check against any reduction in the rates of rent even when prices are falling. The system means a leakage in public revenue when prices are rising and causes a hardship in the years of depression. It is therefore suggested that the final settlement may be supplemented by quinquennial revisions of rent and revenue based on changes in the price-level; or in the alternative, the sliding scale operating in Punjab or the Turner's fluctuation scheme in the United Provinces should be so adjusted as to work both ways.

Finally, the incidence of land revenue per acre reveals significant disparities over different areas even for equally productive soils. This has been caused by the differences in the temporary and permanent settlements, the difference in the ryotwari and zamindari areas, and the differences in the various systems *inter se*. Some measure of standardisation should be achieved.

Tenant's Rights:—These have now been protected by a series of Tenancy Acts in the country aiming at fixity of tenure, fair rents, and freedom to transfer and make improvements. In the United Provinces these are governed by the U.P. Tenancy Act 1939, which consolidates the law relating to agricultural tenancies. According to this Act, landlords can no longer increase their *'sir'* area in future; and while the petty proprietors paying less than Rs. 250 as land revenue have been allowed *'sir'* rights in all such land in which they had acquired it before the passing of this Act, the *'Sir'* acquired by the bigger landlords under the Oudh Rent Act of 1921 and the Agra Tenancy Act 1926 has ceased to be such. This was considered necessary as the tenants of the *sir* land could enjoy no protection. A concession made in favour of the landlords is that they have been allowed 50 acres of *sir* provided the *sir* area at the time of the passing of the Act was more and the protion under their individual cultivation was less than 50 acres. The tenants of *'sir'* land are entitled to retain possession of their holdings for a period of five years. The special classes of tenants are the permanent tenure-holders and the fixed rate tenants in the permanently settled areas and tenants holding on special terms in Oudh. A proprietor after sale becomes an ex-proprietary tenant of such portion of his *khudkasht* which he has cultivated continuously for three years at the date of transfer. Tenants, who had acquired occupancy rights at the commencement of this Act under the provisions of the older Acts were declared as occupancy tenants but no provision was made for the acquisition of occupancy rights in future. All ordinary tenants were given the status of hereditary tenants, a new class created by the Act. Tenants of Sir land and land in which hereditary rights would not accrue and sub-tenants are non-occupancy tenants. The rights of all the tenants except those of the non-occupancy are permanent and heritable; but these are not transferable except those of the permanent tenure holders and fixed-rate tenants. Sub-letting has been restricted to five years in case of ex-proprietary, occupancy and hereditary tenants and to one year in case of non-occupancy tenants. The former cannot sublet it again within three years of its previous sub-letting. Permanent tenure-holders, fixed-rate tenants, tenants holding on special terms and occupancy tenants in Oudh have unlimited rights to make improvements. Other tenants, excepting the non-occupancy tenants, can make any improvements except the construction of a

building or a tank on the holding for which a written consent of the land-holder is required. In case, the land-holder refuses consent for these latter the revenue authorities may give the required permission. The land-holder cannot make improvements, ordinarily, without a written consent of his tenant. All tenants other than non-occupancy tenants have the freedom to transplant trees on their holdings. The Act also prohibits all types of *nazrana* or hari or *begar*. Provision has also been made for fair rents. Rent of the permanent tenure holders and fixed-rate tenants is fixed in perpetuity; whereas that of other tenants, leaving aside the non-occupancy tenants, is not liable to be modified unless a period of 10 years elapses or settlement takes place. Rents may be commuted, determined, abated or enhanced by the law Courts according to the sanctioned rent-rates for the different classes of tenants and for the exproprietary tenants shall be less by two annas in the rupee than the corresponding rates for occupany tenants. Rent rates are determined in each district by the rent rate officers separately for occupancy and hereditary tenants and are ordinarily fixed for 20 years. These are determined separately for each circle and for each separate class of soil, and are to be such, as to be payable without hardship over a series of years. Remission or suspension of rent is granted in case of natural calamities varying from 6 annas in the rupee for a loss estimated at 8 to 10 annas, to 16 annas for loss amounting to and exceeding 12 annas. Rents and revenue may be revised when there is a sudden rise in prices or in an emergency. Rents may be paid either direct, or by postal money-order or by deposit in Courts. Whereas distraint has been abolished, arrears of rent may be realised by obtaining a decree and by its execution by the sale of the whole or a portion of the holding, or by ejectment from a portion of the holding, the rent of which does not exceed one-sixth of the amount of a decree. It may also be satisfied by a lease for a maximum period of six years in favour of a person who pays the decretal amount. Ejectment is allowed only for arrears remaining unpaid for more than a year or on account of any act detrimental to a holding. All arears are however deemed to be satisfied when a tenant is ejected.

The main limitations of the Act are that in spite of a provision to the effect, it has failed to secure fair rents; it fails to create transferable rights and thus limits agricultural credit; and it gives too much freedom of subletting, which has provided a back-door

for the money-lender on the one side and a means of exploiting the land-less proletariat, who ultimately takes the land as sub-tenant on the other. Unlimited transferable rights would have been an evil; and yet, a certain amount of transferability, say, through a co-operative society or a land-mortgage bank is necessary for the provision of long-term agricultural credit.

In Bengal, the new tenancy legislation passed in 1938 abolished illegal cesses and exactions, the zamindar's right to pre-emption and transfer-fee on sale of occupancy holdings, and the privilege of realizing rent by certificate procedure. Most of the tenants are occupancy tenants having permanent and transferable rights. The new Act gives similar rights to the under-ryots as well.

In the Central Provinces, occupancy rights at first were acquired by twelve years' continuous cultivation, later on by purchase at two-and-a-half times the annual rental, and finally in 1920 all tenants became occupancy tenants having heritable rights. The rights were made transferable subject to certain conditions. A tenant may transfer only to a co-tenant or to a person in the special line of heirs. Sub-letting is permitted for one year only and sub-tenants may acquire the occupancy rights if the tenants are found to be in the habit of sub-letting their lands. Rents are fixed by the Settlement Officer at the time of each settlement and cannot be enhanced during the period of settlement in case of absolute occupancy tenants, but are subject to enhancement every ten years in case of other occupancy tenants. Further protection has been granted by the C. P. Tenancy Act 1939.

In the Punjab, the right of occupancy has been based on certain historical grounds and the Act recognises only those as occupancy tenants who, in 1887, for two generations, paid only their share of Government assessment. The rest of the tenants are unprotected.

The need for the protection of the tenants has been felt even in the ryotwari areas. The Bombay Tenancy Act came into force in 1941. It creates a new class of 'protected tenants' by granting fixity of tenure to tenants holding land continuously for a period of not less than six years immediately preceding 1st January 1938. These tenants can however be ejected for sub-letting the land, non-payment of rent, injury to the holding or if the landlord desires to

cultivate the land himself or to use it for a non-agricultural purpose. Provision has also been made for the determination of fair rents for the protected tenants. Exaction of all illegal cesses, rates or dues has been forbidden on pain of a heavy fine. All agricultural leases in future have to be at least for a minimum period of ten years. The ordinary tenants in Bombay have therefore been secured at best a fixity of tenure for 10 years only.

In Madras, whereas the *pattadars* in the ryotwari area had always the right of occupancy and free transfer, the tenants in the permanently-settled areas had no protection until the passing of the Estates Land Act in 1908. This Act gave them the right of occupancy and the right of free transfer. The sub-tenants, except in Malabar have no rights whatever. Rents have continuously increased in the permanently settled areas and are enhancible in the ryotwari areas only on the ground of rise in prices.

There has recently been a movement to grant increasing protection to the tenants in both the zamindari and ryotwari areas, We are still far away from the ideal of absolute fixity of tenure and fair rents. Certain provinces such as Punjab have lagged far behind and have been too niggardly in granting protection to the tenants. Further, right of transferability should be used with proper safeguards, while no room should be left for sub-letting by an otherwise non-cultivating tenant. The actual tillers of the soil, those who labour on it, whether they be tenants, sub-tenants or the farm labourers should have all the rights to work it, and none should stand in their way. The State as the representative of the community should enjoy all ownership in land, entitled to a fair share out of its produce, whatever it may be termed, rent or revenue.

Agricultural Rents: The most outstanding defect of the land system in India is, that in the face of a keen competition for land. it has resulted in a very high level of agricultural rents, impoverishing the cultivators and lowering the standard of farming. The evil of rack-renting has assumed a very serious form having resulted in the poverty of the soil, the poverty of the peasant and the ultimate poverty of the nation.

Rack-Renting: Let aside the consideration, that due to the very small size of holdings in India, there is no surplus in the

economic sense on a majority of the holdings in the country, which may be termed as rent, the contractual rents are so high in general as to leave little or no margin for profitable cultivation. According to the data collected by the Land Revenue Commission, Bengal, the rates of rent in Madras are higher in the permanently settled area than in the raiyatwari area where the average rates are Rs. 7 per acre for wet land and Re 1 for dry land. It may be taken to be about 56 per cent more in the former area. But the rates paid by the sub-tenants are much higher and amount normally to half of the crop and in the best lands in the deltaic areas, rents paid by the sub-tenants are sometimes as high as Rs. 75 per acre. According to the estimates of the Revenue department the rentals in the province are 7 to 10 times the assessment on wet lands and 4 to 6 times the assessment in dry lands; in Tanjore 4·7 to 13·3 times the assessment on wet lands and 7 to 11 times the assessment on dry lands, and in Kurnal 9 times the assessment on dry lands and 2 to 3 times the assessment on wet lands. In Punjab, the Commission pointed out, the great majority of tenants pay rent in kind and are paying half or nearly half of the produce. In the United Provinces the incidence of rent varies greatly from district to district according to the fertility of the soil and the class to which the tenants belongs. The average incidence of rent for all classes of tenants is about Rs. 6 per acre being Rs. 5 for the occupancy and Rs. 8 for the hereditary tenants in the province of Agra. This is usually about one-fourth of the gross produce. The non-occupancy tenants pay as rent about half the value of the produce. The average rate paid by the occupancy tenants in Bengal is about Rs. 3·5 per acre and it is obviously much lower than elsewhere in the country. There can be no doubt that the present levels have increased many times the levels at the time of Permanent Settlement. The ryots in Bengal are paying 30 times more than the original assessment, likewise in the United Provinces the rents varied at the time of the Permanent Settlement from eight annas to Rs. 2-8-0 per *bigha.*

The data collected by other independent sources reveals the same evil of rack-renting. The survey[1] conducted by the Gokhaley Institute in the Wai Taluka of Satara district shows that in 37 dry crop fields the proportion of cash rents to the value of gross produce was more than cent per cent in 2, about three-fourths or

1. For details see Proceedings of the Third Conference of the Indian Society of Agricultural Economics p. 54-55.

more in another 8, about half in 5, one-third or more in another 16 and about one-fourth in 6. In the irrigated crop fields the proportion was half or more in 50 per cent of the fields while in the mixed crop fields only in one out of eight it was less than 40 per cent. The Farm Accounts, Punjab for the year 1938-39 show that the average expenditure per acre on account of rent amounts to 20 per cent of the total expenditure in the older districts, 33 per cent in canal colonies excluding Risalewala, 37 per cent in Risalewala, and 38 per cent in the irrigated areas of the older districts. Where the land is held under the produce-sharing system and this is the more common form of tenancy in the Punjab than that based on cash rents, the landlord's share in the net income is about two-thirds on all holdings being about 77 per cent in the canal colonies. But of the gross income it is half in the canal colonies and about 40 per cent on all holdings. Conditions elsewhere in the country are no better. For the country as a whole the rents account for anything between one-fourth to one-half of the gross produce. No estimate can be made with reference to the net produce, as the latter is in negative in many of the undersized holdings. Such a high level of rents is in itself one of the causes of the deficit economy of Indian agriculture and impedes all agricultural development either in intensive or extensive cultivation. Land taxes in Europe represent only about 3 per cent of the gross revenue on the farm.[1] To organize agriculture in the country on a proper footing the rental level requires to be pulled down considerably to an economic standard.

Rents and Prices:—The keen competition for rents in the country has resulted in the contractual rents having become quite insensitive to the influences of even the price factor, which on theoretical considerations alone is regarded by economists as the main regulator of the level of rents. This is due to, the necessity of the increasing cultivation even of the sub-marginal land due to the absence of any outlet for the surplus rural population, the regulation of rents by legal enactments and their fixity over long periods in case of protected tenants, and the force of custom, which regulates the share of the landlord and the tenants under 'batai' system. A fall or rise in agricultural prices fails to register its effects in a short period except perhaps in the case of the new

1. European Conference on Rural Life 1939—League of Nations Document No. 3.

and the non-occupancy tenants. To illustrate, let us consider the movements of rents and prices in the United Provinces.[1] The agricultural prices were almost constantly rising till 1928 and the decennial moving average index numbers of wholesale prices registered an upward trend from 119 in 1900-1909 to 225 in 1919-1928. The index numbers of the rental demand however increased during the same period from 102 to 118 for stable tenants and from 103 to 141 only for ordinary tenants. There was thus a lag between prices and rents, which was so considerable as to suggest an absence of relationship or co-relation between the two. We can at most say that the rents of the ordinary tenants tend to rise, though not proportionately, in a period of rising agricultural prices. On the other hand, in a period of depression there is no such relationship. In the United Provinces with base 1901-05 = 100, the index numbers for wholesale agricultural prices fell sharply from 230 in 1926 to 103 in 1934, but the indices of the rental demand on ordinary tenants during the same period moved up from 146 to 161 and remained stable round 120 in case of stable tenants. These are based on the cash rent-roll, which does not take into consideration the remissions granted by the Government on account of the fall in prices. Any way, the rents go on rising continually whatever be the price movements. A slight decline in the net cash rents after making cash allowance for the remissions during the depression did not offset the increasing burden of rents on the produce of the soil. During the slump in the United Provinces our study reveals that the index number of net cash rents converted in wheat increased from 100 in 1929 to 161 in 1931. Falling prices not only fail to check the upward trend in cash rents but actually increase the real burden of the rents as measured in terms of the produce of the soil. Measures should be taken to co-relate rents with prices to avoid a bankruptcy of the cultivator in any future slump. Remissions should be adequate to offset completely the effects of the fall in prices as far as rents are concerned.

Grain-rents versus *Cash rent*:—In the last conference of the Indian Society of Agricultural Economics, Professor Gyan Chand criticized the system of crop-sharing in six North Indian Provinces on the ground that it results in a high incidence of rent. Investigations in other parts of the country show that crop-sharing is not in

1. See for index numbers Bulletin No. 1 of Bureau of Statistics and Economic Research, U. P.

all conditions worse than fixed lease. Rack-renting is equally acute in the latter system. Our own study of the period of depression in the United Provinces reveals that in a period of falling prices the incidence of cash rents becomes more burdensome than that of the grain rents under the produce-sharing system. In years of agricultural calamities as well the latter prove more equitable than the former. Money rents are insensitive from year to year to both prices and productivity, whereas the produce rent system is best means for combating the erratic movements of prices and the vagaries of climatic conditions to which Indian agriculture is particularly exposed. In a scheme of produce-sharing the non-cultivating proprietor can also be utilized for rendering certain economic services as in Italy, Tuscany and South France. Produce-sharing is an ideal system of tenancy provided a fair limit is placed on the share of the land owner, who should also share in the responsibilities of cultivation instead of having merely the privilege of getting a share out of its produce. In the alternative, we may adopt a combination of both the system and the tenants should have the option to pay either in cash or in kind according to their convenience.

Economic Rents:—In theory, fair agricultural rents are conceived as a differential surplus of produce. Cohen in the *Economics of Agriculture* says: 'The difference between the total product on the more fertile and on the marginal land, after allowing for the extra labour used on the best land, represents its rent, the charge which the owner of the land can make to any farmer who wishes to hire it. It is obtained because there is a scarcity of the more fertile and consequently more productive land and because, since cultivating this land more intensively results in diminishing returns, other less fertile land must be used. Consequently, farmers will bid against each other for the use of the better land where they can obtain a greater total return for their efforts, and its owners will be able to charge a rent for its use.' But contractual rents in India are not based on any concept of surplus. The Rent Law Commission in 1879 reported 'that the economic theory of rent could not be applied in practice because it assumes that no land will be cultivated which will not yield the ordinary profit derivable from capital employed in other undertakings' whereas in India there is little or no capital employed in agriculture. The immediate object of cultivation is subsistence, not profit on capital. The Commission could only define

fair rent by the rather indefinite description—"such a share as shall leave enough to the cultivator of the soil to enable him to carry on the cultivation, to live in a reasonable comfort, and to participate to a reasonable extent in the progress and improving prosperity of his native land." No amount of calculations however, can reasonably settle the question of economic rents in a practical way on the basis of outturn and cost of cultivation. None can dispute the equity of approximating rents to this ideal of economic rents and yet this ideal like a true ideal shall ever be beyond the domain of practical achievement.

Rents paid by the tenants in India do not represent a similar payment conceived by ecohomists in their theories. These, on the other hand, represent monopoly prices for the use of land and are determined in the same way, in which value under monopoly is determined. The land owner tries to earn the maximum monopoly revenue, which is out of all proportion to the cost of owning the land. The monopoly of each individual owner is more or less absolute so that rents touch the maximum level of exploitation as the tenants, in the absence of any other alternative source of livelihood, have to agree to whatever a land owner wants for the use of his land. To remedy such a situation there are only two alternatives which should be applied simultaneously. The one is to find alternative sources of livelihood through the development of industries and trade and thus reduces the helplessness of the tenant and the margin of exploitation by the monopolist land-owner. The second is to apply an effective control over the monopoly first by regulation of rents and ultimately by its direct operation by the State after the elimination of the rentier monopolist. Public operation of this monopoly is necessary, not only because, public utility is of primary importance in the use of land, but also because the presence of the rapacious rentier middlemen in the guise of land owners is a striking cause of low productivity and impedes agricultural development During the transitional period as well as under State landlordism rents should be fixed at a level, most conductive to the development of farming. Considering the fair incidence of rents and land-taxes in Europe and other progressive countries, rents should not exceed 10 per cent of the gross produce of the soil.

Land Reforms:—The above discussions lead us inevitably to the conclusion that to stimulate agricultural progress there is an urgent

need of land reform in the country. A functionless landlordism, which is confined not only to the zamindari areas but is rapidly growing even in the ryotwari areas, stands like a block in our way to progress and prosperity. To remove it, uniform measures shall have to be applied in all the provinces beginning with the conferment of permanent rights on all tenants, the actual cultivators of the soil, without any saving clauses. The under-ryots, the sub-tenants, the non-occupancy tenants, all should have a fixity of tenure. For granting fair rents, instead of entering into the elaborate calculation for determining rent rates for the different classes of soil, supposed to be based on crop- yields, prices and cost of production and which, miraculously enough, are ever in the vicinity of the existing rates, an all India measure should be enacted enabling the cultivators to pay either the contract rents or 10 per cent of the gross produce in any year, which ever they choose. But the middlemen shall always find a loophole for exploitation and nullifying all land reforms so long as they are in contact with their land and tenants. Hence the management of land and the recovery of rent should be entrusted to the Government Revenue department, which after deducting the Government share and costs of collection should return to the land owners their share in the receipts. In the United Provinces, this can easily be done under the existing laws by declaring all *mahals* as *'kham'*. The importance of taking such measures should not be minimised and though at first the middlemen may be allowed their share, they should in no case be permitted to collect it directly.

Finally, all proprietary interests and intermediary tenures should be extinguished by payment of a compensation, which should not ordinarily exceed twenty times the net revenue This should however be taken to be the maximum and not the average rate for compensation. It may be paid by easy instalments out of the rental collections so that the Provincial Governments can easily discharge their liabilities in this respect by the issue of bonds to the present owners of land or by a Capital Levy as outlined in another chapter.

It shall then be easy to redistribute holdings in a village into proper economic cultivation units and organise farming on a proper footing of co-operation and ultimate collectivisation.

CHAPTER VI.

Crop Production.

Main Trends:—The small-scale farming together with the self-sufficing character of the village economy left little scope for cultivation for the market, and hence, subsistence farming was an outstanding feature of agriculture in India. The improvements in the means of transport and communication during the last century coupled with the development of irrigation facilities resulted in a tendency towards localisation of crops and the farmer gradually began to devote an increasing attention to his special crops, which were meant for the market rather than for his direct consumption. This specialisation of crops with a bias towards cultivation for the market ultimately created certain well defined agricultural zones with a preponderance of particular crop or crops in each. In each zone, there has been a greater increase of acreage of the particular crop to which its soil, climate and irrigation facilities are most suited than that of the other crops. To illustrate, in the rice zone of Bengal, Bihar and Orissa, the area under wheat has steadily declined, but in the wheat zone of Punjab and N. W. F. P. it has increased from 7·5 million acres in 1890 to more than 10 million acres at present. Likewise in another wheat zone, in the United Provinces, while the area under rice is registering a declining trend, that under wheat has been increasing, being now more than 7 million acres as compared to about 4·8 million acres towards the close of the last century. Similar specialization has proceeded apace in other regions.

Another remarkable feature has been the relatively greater increase in the area under cash or commercial crops. The area under commercial crops in British India increased from 16·47 million acres in 1900-01 to more than 24 millions in 1929-30 and that under oil-seeds increased during the same period from about 13 million acres to more than 16 million acres. But during the Great Depression the cultivation of non-food crops was at a discount as due to the shrinkage of the outside markets the commercial crops were the first to be effected by the slump. The area under non-food crops declined from some 51 milliom acres in British India in 1928-29 to about 46 million acres in 1934-35. The relative changes in the prices of crops, it appears, have a bearing on the

variations in the areas under various crops, particularly, if these are grown for the market. The decline was however not appreciable and we were faced with the problem of surpluses of non-food crops, which was further accentuated by the present war particularly in respect of raw cotton and groundnuts.

Small-scale farming has however remained an outstanding feature of Indian agriculture till today. It has meant the cultivation predominantly of the food crops, the area under which increased from 182 million acres in 1900-01 to more than 200 million acres in 1929-30. This increase was much less than the increase under the non-food crops and was neither commensurate with the increase in population nor with the development of irrigation facilities. During the slump, the cultivation of food crops was at a slight premium and the acreage in British India increased to more than 206 millions. But it declined again during the period of recovery while the increase in population went on. The present war, cut off the supplies of Burma rice and put additional food burdens on the resources of the country. The deficit, which was gradually growing became marked and turned into a crisis and then into a famine.

On the whole, our outstanding problem in crop production is one of surpluses and deficits; and a plan of adjustments of areas under various crops is urgently needed.

Exports and Imports:—In spite of subsistence farming, international trade has played an important part in the crop economy of the country since the opening of the Suez Canal. One of the outstanding trends in this respect has been that of a decline in the exports of our agricultural produce since the Great War in general and the Depression in particular. The present war has given a further fillip to the same tendency so that agricultural production today is little for an external market. The trend is clear from the following statistical tables:—

TABLE I.

Percentage of Exports of Certain Principal Crops to Total Production I.

Crops.	1909-10 to 1913-14 average.	1914-15 to 1918-19 average.	1919-20 to 1923-24 average.	1930-31	1939-40	1940-41	1941-42
Rice	9	5	5	7	1·1	1·1	1·3
Wheat	14	9	3	2	0·1	0·4	1·8
Tea	96	89	95	91	78·9	75·3	76 2
Cotton (raw)	56	51	61	75	59·6	35·7	23·5
Jute (raw)	51	31	48	31	33·0	10·3	32·3
Linseed	73	63	59	68	46·9	54·8	71·0
Rape & Mustard	23	8	19	4	2·2	3·2	3·1
Sesamum	25	8	6	0·2	0·8	0·9	2·1
Ground-nut	35	12	19	19	18·3	9·1	15·5
Indigo	40	44	27	7	....	....	....

It is evident from the above table that leaving aside the case of tea, cotton, jute and linseed and to a small extent that of ground-nuts, foreign demand is of no considerable significance for crop-production in the country. Practically speaking, the shrinkage in our export markets for agricultural commodities has been great during the present war.

TABLE II.

Exports of Agricultural Produce in crores of rupees.

	1938-39	1939-40	1940-41	1941-42	1942-43
Grain, pulse & Flour	7·80	5·07	6·02	10·70	7·12
Tea	23·29	26·08	27·79	39·60	31·68
Seeds	15·10	11·90	10 06	10·57	10·57
Cotton	24·82	30·11	24·60	17·90	5·58
Jute	13·40	19·73	7·85	10·42	9·01

1. See Review of the Trade of India in 1941-42 p. 231.

On the whole, with the sole exception of tea the exports of all other agricultural commodities have fallen to a great extent during the present war. Does it then mean that the post-war period will again witness a revival of the exports and the growing importance of the international markets in our crop-economy? The question cannot satisfactorily be answered without a study of the long term trend in the pre-war period.

The following are the relevant statistics:—

TABLE III.

Export Trends of Main Agricultural Commodities
Quantity in Thousands.

	Pre-war 1909-10 to 1913-14	War 1914-15 to 1918-19	Post-war 1919-20 to 1923-24	1929-30	1938-39	1939-40
Rice (in the husk) Tons.	42	32	35	28	3	4
Rice (not in husk) „	2398	1685	1462	2298	282	262
Wheat .... „	1308	807	237	13	279	8
Wheat flour „	55	57	56	51	61	50
Pulse „	159	129	141	97	81	73
Barley „	227	198	40	6	9	....
Jowar & Bajra „	41	41	11	15	24	7
Other Sorts „	181	192	27	2	3	4
Total Tons	4411	3141	2009	2510	742	408
Tea lbs. „	266,497	322,691	321,169	376.634	348,000	356,695
Cotton (raw) tons	430	391	521	727	482	526
Jute (raw) „	764	464	554	807	690	568
Oil-seed „	1453	708	923	1195	1199	851
			Value in Lakhs rupees.			
Grain, Pulse & Flour	27	20	31	22	7·8	5
Tea	13,07	17,55	20,92	26,01	23,29	26,08
Cotton	33,27	33,63	64,74	65,08	24,82	30,11
Jute	22,20	12,80	19,53	27,17	13,40	19,73
Seeds	24,37	12,17	23,54	26,46	15,10	11,90

There can be no doubt that war overtook an already week trend in the export of food stuffs in which rice was the only important item, which was mainly exported from Burma. and hence, after the separation of the latter in 1937, there was naturally a shrinkage of exports under this item. The external markets for wheat, after the Great War could not be exploited again due to foreign competition and the growing internal demand. Actually at present, the food production in the country falls short of the internal requirements and the Government has been obliged to prohibit all exports of food-stuffs and a revival of the same even in the post-war period cannot be regarded with equanimity. But the exports of jute, cotton and oil-seeds were not registering a downward trend and although there were not altogether spared by the slump nearly two-thirds of the cotton production, half of linseed and one third of Jute was being absorbed in the foreign markets before the out-break of the hostilities. The loss of the foreign markets caused by the war has not been compensated by the increased demand in the country and a serious maladjustment has arisen between the production of these crops and the total demand. There are two alternatives to resolve these surpluses either to adjust production to the internal demand, which is likely to grow with the industrial development in the country except in the case of jute, or to take special measures for the present and exploit the external market again in the post-war period. The first will be more in the national interest, provided it does not prove too costly in the long run, as large areas are required to be released for growing more food to meet the internal shortage in this respect.

As far as imports were concerned, the country depended little on foreign supplies before the Great War except for sugar. Even in the post-war period little had to be imported either in food or agricultural raw-materials although the growing needs of the textile industry in the country increased our dependence on the foreign supplies of long staple cotton. The self sufficiency with regard to food stuffs was so complete that protective measures had to be adopted to check the imports of wheat and rice during the slump. The development of the sugar industry after the passing of the Sugar Industry Protection Act 1932 made the country self sufficient even in the matter of sugar. But the separation of Burma in 1937 gave a serious blow to the self-sufficing character of the

country's food-economy. Before the outbreak of the war the statistical position was as follows:—

Imports of Agricultural commodities quantity (in thousands).

	1909-10 to 1913-14	1914-15 to 1918-19	1919-20 to 1923-24	1939-40
Grain, pulse & Flour tons.	15	34	136	2451
Cotton raw „	12	58	12	84
Sugar „	727	553	517	255
Tea lbs.	4842	7412	7668	3346
		Value in	Lakhs of	rupees.
Grain, pulse & Flour	19	53	269	2181
Cotton raw	102	44	201	805
Wool raw	16	18	15	75
Rubber raw & manufactured	23	97	184	167
Spices	164	206	236	254
Silk raw & cocoons	118	111	152	62
Fruits & vegetables	107	110	175	121
Sugar	1292	1456	1971	331
Tea	22	47	55	16

The imports of both food and agricultural raw materials had been considerably increasing throughout the post-war period except that of sugar and tea, where in both cases the increase in the local production had reduced the share of the foreigners in the internal market. The depression in the silk manufacturing industry caused shrinkage in the imports of raw silk. Our dependence on foreign supplies steadily increased in case of grain, pulse and flour, spices and fruits and vegetables. Obviously, the outstanding cause of the loss of the self sufficient character of the food-economy of the country was the lag between the movements of production and requirements and the leakage caused by the separation of Burma. The post-war period had also witnessed the increasing dependence for cotton, wool and rubber on foreign supplies, whose production had lagged behind the development of the manufacturing industries. Here, it was a simple case of lack of planning and foresight.

During the present war period the trend of imports has been as given in the table below:—

Value of imports in lakhs of rupees.

	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.
Grain, pulse & flour	1,376	2,181	1,435	1,502	31
Cotton	851	805	943	1,534	1,542
Wool raw	62	75	279	277	295
Rubber raw	....	....	32	80	8
Spices	263	254	219	221	151
Silk raw & cocoons	....	62	76	81	174
Fruits and Vegetables ...	134	121	102	112	111
Sugar	46	331	36	108	2

The dependence of the country on rice-imports in particular was progressively increasing before the outbreak of the war; but after the capture of Burma by Japan the foreign supplies could not be maintained. This aggravated the food situation and there can be no denying the truth, that whereas the extent of dependence on imports of food-stuffs is not large, the country is no longer self-sufficient in her food supplies. The Foodgrains Policy Committee 1943 reported that India must cease, for the duration of the war, to be a net exporter of food and requires imports of 500,000 tons to build up a Central Foodgrains Reserve and for current consumption an amount which cannot be put at less than 1,000,000 tons a year. The stimulus, which the textile industry has received during the war period has also increased the dependence on foreign cotton and wool. To sump up, considering the potentialities of agricultural development in the country, there is ultimately no reason for our dependence on foreign supplies either of food or of agricultural raw materials. What is required is a bold plan for the development of agriculture aiming at a self-sufficient national economy.

Area and Yield of the Principal Crops: Let us now review in detail the area and yield of the main crops grown in the country. The pre-war acreage was as follows:—

Area and % to total sown area under different Crops in British India [1].

1938-39

Millions of Acres.

Crops.	1901-02.		1938-39.	
	Area.	Percentage.	Area.	Percentage.
Foodgrains.				
Rice	70·07	31·8	69·92	28·9
Wheat	18·61	8·4	26·78	11·1
Barley	6·22	2·8	6·20	2·5
Jowar	21·82	9·8	20·83	8·9
Bajra	13·20	5·9	12·77	5·2
Ragi	3·75	1·7	3·49	1·4
Maize	6·20	2·8	5·72	2·4
Gram	9·78	4·4	11·68	4·8
Others	27·35	12·4	28·85	11·9
Total	177·00	80·0	186·26	77·1
Other food crops :—				
Spices	8·03	3·7	1·50	0·6
Others			1·35	0·5
Fruits and vegetables....			3·90	1·6
Sugar	2·60	1·3	3·15	1·3
Total food crop	187·63	85·0	196·17	81·0
Oilseeds :—				
Linseed	2·27	1·0	2·48	1·0
Sesamum	3·75	1·7	2·42	1·0
Rape and Mustard	2·88	1·3	2·98	1·1
Ground nut	....	....	5·70	2·4
Coconut	....	....	0·66	0·3
Castor	....	....	0·42	0·2
Others	3·07	1·4	1·54	0·6
Total	11·97	5·4	16·19	6·6

1, Agricultural Statistics (Provisional) for 1938-39.

Crops.	1901-02.		1938-39.	
	Area.	Percentage.	Area.	Percentage.
Fibres.				
Cotton	10·30	4·7	13·89	5·7
Jute	2·28	1 0	3·13	1·3
Others	0·56	0·2	0·71	0·3
Total	13·14	5·9	17·73	7·3
Other Non-food crops.				
Indigo	0·79	0·4	0·04	....
Opium	0·61	0·3	0·01	....
Coffee	0·12	0·05	0·10	....
Tea	0·49	0·3	0·74	0·3
Tobacco	0·95	0·45	1·16	0·5
Fodder crops	2·94	1·4	10·37	4·3
Others	1·71	0·8	1·09	0·4
Total non-food crops	32·72	15·0	47·41	19·0
Total sown area	222·35	100·0	243·58	100·0

The estimates [1] of the area and yield of the principal crops were as follows:—

Average Area of principal crops in India (including certain Indian States).

Millions of Acres.

	1900-01 to 1904-05	1910-11 to 1914-15	1920-21 to 1924-25	1930-31 to 1934-35	1935-36 to 1939-40
Rice	43·45	61·28	69 38	70·30	72·71
Wheat	25·52	30·55	29·56	33·90	34·39
Sugarcane	2·26	2·38	2·63	3·18	3·82
Tea	0·52	0·59	0·70	0·51	0·83
Cotton	16·50	22·99	22·08	23·26	24·20
Jute	2·34	3·05	2 27	2·54	2·86
Linseed	3·55	3·85	2 21	3·26	3·72
Rape and Mustard	5·60	6·41	6·05	6 06	5·67
Sesamum	4·90	5·17	4·33	4·35	4·22
Castor seed	....	....	1·50	1·53	1·24
Ground nut	4·31	1·42	2·51	6·14	7·54
Coffee	....	....	0·13	0·18	0·18
Rubber	....	....	0·07	0 09	0·13

1. Area and yield of principal crops in India 1940-41.

Yield in millions.

	1900-01 to 1904-05	1910-11 to 1914-15	1920-21 to 1924-25	1930-31 to 1934-35	1935-36 to 1939-40
Rice tons	18·63	24·71	26·25	26 70	25·49
Wheat tons	7·68	9·66	9·01	9·38	10·14
Sugar tons	2·05	2·41	2·81	4·38	5·17
Tea lbs.	201·32	289·95	336·38	400·35	424·86
Cotton bales (400 lbs)	3 18	4·33	4·83	4·69	5·55
Jute bales (400 lbs.)	7·04	9·07	6·35	8·06	8·41
Linseed tons	0·42	0·51	0·44	0·40	0·44
Rape and Mustard Tons	1·01	1·23	1·12	0·98	1·00
Sesamum „	0·47	0·47	0·44	0·44	0·43
Castor „	....	....	0·11	0·13	0·11
Ground nut „	....	0·59	0·95	2·50	2·94
Coffee lbs.	....	....	23·60	33·40	36·73
Rubber lbs.	....	....	8·21	11·87	30·55

It is necessary here to point out the main defects about the statistical information given above or to be used later on. In India information is entirely lacking for about 44 per cent of the total area covered by the Indian States. Again, there are certain States, which furnish information about the area but have no estimates about the yield. In the permanently settled areas, there cannot be more than a rough estimate owing to the non-existence of accurate cadastral records and surveys about the lands held on privilege tenure and unsurveyed areas. There is no information whatsoever about the tribal areas of N. W. F. Province and British Baluchistan. Regarding the estimates of yield Sir John Russell rightly remarked: 'The quantities of food produced, however, are not nearly so well known as the acreages. The published figures are obtained by the use of an old equation: Production area × standard outturn × seasonal condition factor. The standard out-turn is not the average yield over a number of years, but the modal value over a long period and so is unaffected by high or low yields of particular years. Unfortunately the standard outturn had not been redetermined for a long while, and it is very desirable that

this should be done again—it involves a number of sample weighings. The seasonal condition factor can never be much more than a guess'.[1] But as these defects have existed for many years, the value of the Agricultural statistics is vitiated only for absolute measurements in any particular year, but not for comparisons over a long period.

During the present war, on the recommendations of the Food Production Conference, which met on 6th April 1942, the Government of India initiated since the summer of 1942 the 'Grow More Food' Campaign. Certain additional area under the food gralns was secured chiefly by diverting lands from shortstaple cotton to food grains and targets fixed for the minimum increase in the acreage under major food grains for 1943-44 aimed at a total increase of ten million acres under Kharif and 1·33 million acres under Rabi crops over the average of the period 1936-1939.

The following table shows the war-time area and out-turn of the major crops in the country.

Area and yield of the principal crops in India including certain States.

Area in Acres.

Figures in millions.

	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.
Rice	73·34	74·23	73·06	73·58	74·92
Wheat	35·44	34·01	34·85	34·04	34·30
Sugarcane	3·13	3·64	4·60	3·51	3·59
Groundnut	8·50	8·41	8·77	7·07	7·43
Rape and Mustard....	5·54	6·11	6·22	6·20	5·78
Sesamum	4·33	4·03	4·10	4·15	4·33
Linseed	3·87	3·72	3·62	3·35	3·41
Castor seed	1·20	1·01	1·02	1·00	1·35
Jute	3·17	3·16	5·67	2·16	3·30
Cotton	23·49	21·58	23·29	24·15	18·81

1. *Opp. Cit.* p. 17.

Yield in millions.

		1938-39.	1939-40.	1940-41.	1941-42.	1942-43.
			Tons	or Bales	(400 lbs.)	
Rice	Tons	23·96	25·80	22 15	25·35	24·53
Wheat	,, ...	9·96	10·78	10·03	10·04	10·97
Sugarcane	,, ...	3·39	4·66	5·79	4·37	5·69
Groundnut	,, ...	3·16	3·17	3·70	2·59	2·71
Rape and Mustard	,, ...	0·92	1·12	1·10	1·08	1·04
Sesamum	,, ...	0·40	0·42	0·43	0·41	0·46
Linseed	,, ...	0·44	0·47	0·43	0·36	0·41
Castor seed	,, ...	0·11	0·97	0·11	0·91	0·15
Jute (bales)	....	6·82	9·75	13·19	5·47	9·02
Cotton (bales)	....	5·05	4·91	5·90	6·13	4·55
		Area	under mil	lets in Bri	tish India	only.
		Jowar	Bajra	Gram	Barley	Maize
1939-40	....	21·68	13·36	11·69	6·10	5·77
1942-43	....	21·92	16·06	13·30	6·70	6·32

In the year 1942-43, the area under rice, sugarcane, rapeseed, castor seed, jute, and all the millets had increased as compared with the pre-war acreage—the most marked increase being under millets and in particular under *bajra*. On the other hand, the areas under wheat, groundnut, linseed, and cotton have decreased, the decline being particularly substantial under the last crop. Examining yelds, we find that on the whole, the output of the food-crops during the war years has been higher than in the year 1938-39. The yield of the seeds of the edible oils also increased together with that of jute. The decline, particularly towards the end was substantial, in the case of the crops, which entered the export market *viz*, groundnuts, linseed, and cotton.

Production and Requirements:—The Food crops.

More than 80 per cent of the cultivated area in British India is devoted to the food crops and yet it is highly doubtful that people get a sufficient food supply. Examining the question in

1936-37, Sir John Russell in his report on the work of the Imperial Council of Agricultural Research gave the following estimates without making any deductions on account of seed and wastage from the estimated amount of production.

Production in ozs. of all grains, including pulses and oil-seeds per head per day. Cotton seed is not included.

Province.	Total grain million tons.	Population millions.	Total grain oz. per head per day.	Nitrogen grain per head per day.
Assam	1·6	8·6	18	7
Bengal	9·3	48·9	19	7
Bihar and Orissa	9·0	36·7	24	11
Bombay	6·1	20·6	29	16
C. P.	4·8	15·5	30	15
Madras*	10·4	46·7	22·0	11
Punjab	5·0	23·6	21	12
United Provinces	10·6	46·7	22	13

At an average, the estimate suggests a production per head per day of about 20·22 ozs of all grains, pulses and oil-seeds whether used for food or not. This would give a daily caloric value of about 2000 or 2500 according to the proportions of oil-seeds taken and a nitrogen supply of about 12 grams daily. The figures do not include vegetables, sugar or animal products. They at best represent the potentially available supplies and not the actual amounts available and even as such the figures represent an over-estimate as no allowance has been made even for the increase in population after 1931.

Sir John Russell has also considered the data afforded by the several surveys of village dietaries that have been made. According to the survey made by the Punjab Board of Economic Enquiry in 1934 and 1935 the total quantity of grain eaten per head per day varies round about 15-20 oz., but for men only was 20 to 28 according to occupation. Mrs. Wiser found that about 16 oz.

*Includes groundnuts which forms 20 per cent of the whole.

per head was normally consumed in a U. P. village. Dr. Aykroyd and his staff at Coonoor made certain surveys in South-East Madras on the basis of consumption units *i.e.* the equivalent number of adult men, using the scale adopted by the League of Nations Health Organisation in 1932. These surveys reveal the following dietary per 'Consumption Unit' per day:—

Protein.	Fat.	Carbohydrates	Calories	% of total calories from cereals.	Calcium.	Phosphorus	Iron
gm	gm	gm			gm	gm	mgm
62·7*	26·9	488·9	2400	87	0·31	1·51	32·8

Taking Dr. Aykroyd's standards regarding requirements *i.e.* 2,600 calories as the average daily requirement of a man or 65 grams of protein, probably 45-60 grams of fat, 20 mgms iron, some 0·6 grams calcium and1 gram of phosphorus, Sir John Russell arrives at the conclusion that the average supplies available approximately satisfy both the nitrogen and the caloric requirements when allowance is made for the fats and *gur* taken. A serious defect is about the lack of vitamins, especially of A and B, and that of calcium. They can only be supplied by widening the diet and making it include more milk, vegetables and fruit. He sums up by stating:—

'The well balanced diet does not require but less cereals than at present, but it includes more of everything else, especially of vegetables, fruit and milk, and one great need for the food supply is to increase the production of these three'.[1]

Examining the question from another angle, Sir John Russell found that the acreage under food crops as compared to the cash crops has risen much less and per head of population it has actually fallen.

* Containing nitrogen 10 grams (conversion factor 6·25).

1. *Opp. Cit.* p. 21.

Area per head of population in British India.

	1903-04 to 1907-08	1908-09 to 1912-13	1913-14 to 1917-18	1918-19 to 1922-23	1923-24 to 1927-28	1928-29 to 1932-33
Net area sown	0·883	0·906	0·918	0·879	0·868	0·841
Under food crops....	0 829	0·882	0·873	0 833	0·803	0·785
Under food crops omitting sugar.	0 818	0·852	0·862	0·822	0·792	0·774
Under non-food crops.	0 053	0·043	0·04.	0 045	0 065	0·057

The estimates made by Dr. Radha Kamal Mukerjee[1] in 1937-38 reveal a more disquietening situation. The statistical position, according to him, shows that the rate of increase of total food production in India is being increasingly out-run by the rate of population increase. The margin in the case of the aggregate food production has been steadily diminishing, until in 1937-38 there was an actual deficit of 15 per cent, while the food supply actually available for consumption diminished by 7 per cent as compared with 1910-15 Assuming a daily requirement of 2,800 calories per man *i.e.* 2,600 for consumption and 200 for waste in kitchen and at the table, Dr Mukerjee calculates a food shortage for 48 millions of her average men the average deficit being 423 calories in each man's daily ration. The following figures reveal the deficit:—

India's population in 1935	377 millions.
India's food needs	321·5 billion calories.
India's food supply	280·4 billion calories.
India's food shortage	41.1 billion calories.

In more recent times the deficit or shortage seems to have grown still further. The Food Member stated on August 9, 1943, that, if the average adult diet is only 1 lb of food grains a day, the consumption needs of India are 50·5 million tons. With 4·5 million tons as seed requirements, the total foodgrains necessary are at least 55 million tons. If half the people of India consume a little more *viz.*, 1¼ lb. a day the figures go up to 61 million tons.

2. "Food Planning for Four Hundred Millions."

And our normal production of the principal food grains is only about 50 or 51 million tons. On the other hand, if it is assumed that men require 2 lbs. of cereals per day, women 1¼ lbs. and children 1 lb. the total cereal requirements come to about 81 million tons and odd showing a deficit of about 40 per cent in the food supply of the country.[1]

In view of the gravity of the situation throughout India in respect of the supply and distribution of food grains the question was referred to a Foodgrains Policy Committee by the Governor-General-in-Council on 15th July 1943. The Committee considered the following statistical position:—

Figures in million tons.

	Total yield of 7 food grains.	Net Imports deducting exports.	Net available for consumption.
1935-36	49·89	1·74	51·6
1936-37	55·48	1·24	56·7
1937-38	54·32	0·63	54·9
1938-39	49·38	1·04	50·6
1939-40	53·06	2·22	55·3
1940-41	50·17	0·99	51·2
1941-42	51·81	0·43	52·2
1942-43	53·93	—0·36	53·6

This has been the supply position while the population increased by 50 millions over a decade. The significance of imports, although they represent only a small percentage of India's massive production of food grains cannot be under-estimated. In certain areas, particularly Bombay and Malabar Coast the imports represent a very substantial percentage of their total requirements. Again, it must be borne in mind that the *per capita* availability of food supplies in India, even in normal times was low. The country may be described as 'only slightly less than self-sufficient in food grains as a whole, nevertheless the self-sufficiency implied by this statement at the very best is self-sufficiency at a very low level

1. Commerce 27th March 1943.

of *per capita* consumption. There is very little room, taking the country as a whole, for the process of tightening the belt. We have it on the authority of the highest nutritional expert in this country, Dr. Akroyd, that there is at all times serious under-nourishment of some third of the population. Moreover, in considering Indian conditions, it is impossible to over-look both the annual rate of increase in the population, or the enormous absolute size of population'.[1] Even on the basis of the difference between exports and imports without taking into account a desirable minimum standard of consumption per capita the Foodgrains Policy Committee found a normal yearly deficit of 14,000 tons of foodgrains in Assam, of 5 lakh tons in Bengal, of 2,75,000 tons in Bihar, of 4,46,000 tons in Cochin and Travancore, of 7.64,000 tons in Bombay, of 8,48,000 tons in Madras, and of 38,000 in N. W. F. P. The surplus provinces are only the Punjab, the United Provinces, Sind, C. P. & Berar, and Orissa with an average net export of 7,54,000 tons, 69,000 tons, 3,28,000 tons, 2,34,000 tons and 1,82,000 tons of foodgrains respectively. The deficit increases in years of bad rainfall and according to the Government estimates in July 1943 the aggregate deficiency amounted to 47,43,000 tons of food grains for the country as a whole.

Hence whatever standard, we adopt whether it be, that of the movements of population and food-supply, that of the standard food requirements and the available food supply, or that of the average actual consumption *per capita*, we arrive at the same conclusion that there is a shortage of production as compared to the requirements in the country. The deficit is really large when we consider requirements on the basis of 'well-balanced' diets. Sir John Megaw, formerly Public Health Commissioner with the Government of India reported: 'Taking India as a whole, the dispensary doctors record that 39 per cent of the people are well nourished, 40 per cent poorly nourished and 20 per cent very badly nourished.' Sir John Orr is of the view that permanent underfeeding and periodic starvation is a rule in India. To have a balanced diet Dr. Aykroyd has pointed out the need for a 30 per cent increase in the consumption of cereals, 100 per cent in pulses and vegetables and 300 per cent in milk and milk-products. He writes, 'In general, diets in India are defective because they do not contain 'protective' foods in sufficient abundance. Our aim

1. Report of the Foodgrains Policy Committee p. 33.

in public health nutrition work in general, and in planning "well-balanced" diets, must be to increase intake of "protective" foods.' A calorie make-up of our village dietaries, as investigated by Mrs. Wiser shows that these diets are high in carbohydrates, while protein, and especially fat are low. This is due to the fact that the diets are largely based on cereals and proteins come from vegetable rather than animal sources.

Truly speaking, estimates about food requirements (although Dr. Aykroyd has told us 'that an Indian male, of sedentary occupation, requires some 2,160 calories.....and six hours moderate work will involve an increase of requirements to roughly 2,600') cannot entirely be based on calories required. We may quote the authority Dr. W. Burridge, Professor of Physiology, Lucknow University to show that even when an average Indian is getting only 2,000 calories per day as against 3,750, which an American gets there is no obvious ground, without taking other factors into consideration, to conclude that there is starvation in this country.[1] There cannot be any universal dietary scale and Dr. Burridge holds that 2,400 calories per day would suffice for an average Indian agricultural worker. He believes in the aphorism that 'you cannot starve a workman and keep him at his work'. A lower intake of calories therefore means only less work. Every regular worker consumes regularly enough calories to do his work otherwise he cannot work for long. A greater caloric intake will certainly promote initiative, enterprise and efficiency. But an indiscriminate increase of caloric intake either with reference to the standard laid down by Dr. Aykroyd or by Voit would not be safe, as we do not yet know the maximum that can be taken under different local conditions. Again, a dietary based on food-grains leaves little spare stomach-room for leafy vegetables or fruits, which are bulky.

To conclude, we produce less food than what we ordinarily consume and much less than what we ought to consume. It does not however mean that we should produce and take more of cereals. A well balanced diet may imply less of grains but more of fruits and milk. The deficit in food supply, which has been estimated even to the extent of 40 per cent on the basis of a balanced diet does not always mean a shortage of bread. It implies on the other hand

1. 'Climate and labour' p. 81.

usually a shortage of fruits and vegetables and animal products. An increase of 50 per cent in wheat production and 30 per cent in rice production as envisaged by Dr. W. Burns in a recent note on the technological possibilities of agricultural development may be sufficient to meet the shortage in the supply of cereals. But it will not make for the total deficiency in the food supply, which can be removed only by producing many times more of milk, fruits and vegetables than the present out-put.

Non-food-crops:—In the production of non-food crops, while there is a deficit in long staple cotton, wool and silk even at the present stage of industrial development, and which is therefore likely to grow in future, we have normally a surplus yield available for exports in cotton, jute, tea, coffee, rubber and certain oil-seeds. The exports of these acccunted for about 50 per cent of our total exports in the period immediately preceding the present war. The average figures of quantity and value of exports from India from 1937—to 40 are given in the table below:—

Average exports from 1937-38 to 1939-40.

	Quantity in thousands.	Value in thousands rupees	Percent of Total exports.
1. Fibres.			
Jute raw tons	668	1,59,492	8·7
Cotton ,, ...	499	2,76,655	15·2
Others	....	47,418	2·6
		4,83,565	26.5
2.			
Tea lbs.	3,12,990	2,42,517	13·3
Coffee cwts	163	6,762	0·3
Rubber lbs	18,839	8,406	0·5
		2,57,685	14·1
3. Oil-seeds			
Linseed Tons	254	31,162	1·6
Groundnuts ,, ...	667	86,834	4·8
Others	....	14,750	0·9
		1,32,746	7·3

In brief, more than three-fourths of our tea, coffee and rubber production, nearly two-thirds of our cotton, one-third of jute half of linseed, and one-fifth of groundnuts were normally absorbed in the foreign markets and represented a surplus production as measured by the standard of a self-sufficient economy. Need we then curtail the cultivation of these crops and treat our agricultural exports in the nature of an unwanted surplus? Such a step may mean a huge fall in our export trade and in consequence a corresponding decline in our imports. On the eve of an industrial development, which we envisage in the post-war period, the country may not be able to afford any sudden reduction in the value of its exports as essential producers' goods have to be purchased from abroad. But at the same time it has to be remembered that our agriculture suffers from an inertia due to which it will not be practicable to curtail the cultivation of these surplus crops all at once. Moreover, if agricultural raw materials are exported, the foreigners get the manufacturing costs and in some cases at our own expense. The aim of our agricultural policy therefore, should be to reduce these surpluses so as to adjust production to the internal requirements in the long run except in the case of tea and coffee which rightly speaking do not fall under the category of raw materials. There is likewise no ground for restricting the area under oil-seeds although it is a most vicious act to permit their exports. The country does not get enough supplies of edible oils and the seeds with the exception of linseed and castor fall within the group of food crops, the supplies of which have to be augmented rather than curtailed. As for fibres, no independent country could have permitted the exports of an important raw material, of which it holds a monopoly. We should take all possible steps to develop our foreign markets for jute manufactures and at the same time restrict the cultivation of Jute to the requirements of the Indian industry only. The area under cotton has both to be curtailed and expanded to remove the surplus of short-staple and the deficit of the long staple respectively to make the country self-sufficient. The problem of rubber is that of its utilization within the country by a proper development of the manufacturing industry rather than that of curtailing its production.

The aim of crop planning should be self-sufficiency which should be achieved not with reference to the current consumption

of food and raw materials but by taking into consideration the requirements on a reasonable standard of national nutrition and the future needs of industry There is no reason for the country either to suffer from mal-nutrition or depend to any extent on foreign supplies for its food; and similarly, there is no economic gain for growing raw materials for the benefit of the manufacturing industries in outside countries. It is primarily to achieve such a self-sufficient economy, which does not imply the refusal to take the cheap raw materials from the other parts of the world for the purpose of processing them in the country, that the crop-plan of the country should be drawn.

CHAPTER VII

Crop Production

Rice:—Rice is by far the largest single crop grown in India being the staple food of millions. India is the largest rice producing country of the world as judged by acreage and accounts for nearly 40 per cent of the world acreage of rice and for more than 30 per cent of its production. The shares of the chief rice producing countries of the world are shown in the table given below:—

Percentage share in the area and production of rice in the world 1935-36/1936-37

	Area	Production
India	39	31
China	23	34
Indo-China	7	4
Japan	4	8
Burma	6	5
Java	5	4
Siam	3	3
Phillipines	3	2
Others	10	9

World Production of Rice in Quintals (000's omitted) 1939-40

British India	385,320
Japan	128,056
Siam	50,826
Korea	26,644
Formosa	16,883
U. S. A.	10.677
Asia	850,000
Africa	20,000
Europe without U.S.S.R.	12,000
World	916,000

About 88 per cent of the rice acreage in India is located in the British Provinces and the remaining 12 per cent in the Indian States. It is grown over a wide area and in sufficient varieties but the main zones of rice cultivation are Bengal, Madras and Bihar, which together account for 60 per cent of its production in the

country. The total area reported in the second rice forecaste for 1943-44 was more than 76 million acres distributed as follows:—

Second Rice Forecast 1943-44

Provinces and States.	Area 1000 acres.	Yield of cleaned rice 1000 tons.	Yield per acre lbs.
Bengal	26,026	11,375	979
Madras	9,523	4,636	1,090
Bihar	9,610	3,217	750
C. P. and Berar	7,664	2,369	692
U. P. (including Rampur)	7,088	?	?
Assam	5,040	1,953	868
Orissa	4,918	1,317	600
Bombay (including States)	2,612	1,088	933
Sind (including Khairpur)	1,323	451	764
Others	1,086	?	?
Total	76,075	....	....

According to the report of the Marketing of Rice in India the production figures are ordinarily an under-estimate to the extent of about 10 per cent as the conversion factors from paddy to rice are in most cases, lower than the actual. The winter rice crop is usually sown between June and August and harvested between November and January. The autumn crop is harvested in September while the spring or the summer crop is taken from April to June. Summer rice generally gives the largest yield and autumn the smallest. Similarly, transplanted rice gives a higher yield than the broadcast sown crop. The all-India average yield per acre is less than 800 lbs, although even a yield of 3000 lbs to 4000 lbs. per acre is obtained with good manuring, artificial irrigation and in really good conditions when the crop is raised by transplanting. The average yield in India compares very unfavourably with that of U. S. A., Japan, Egypt or Italy, where the yields per acre are more than 1400 lbs, 2300 lbs, 2000 lbs. and 3000 lbs. respectively.

Taking the country as a whole, roughly 60 per cent of the crop is retained in villages and in the report on the Marketing of Rice the following estimates were given about the production and marketable surplus of rice in the country[1].

Production and marketable surplus of rice in India

Thousand tons

Average 1934-35 to 1936-37

	Total	Fine	Medium	Bold	Raw	Par Boiled	Machine Milled	Hand pounded
Production less Seed requirements	26,745	3,390	8,700	14,655	11,424	15,321	7,338	19,407
Proportion	100	13%	32%	55%	43%	57%	27%	73%
Marketable Surplus	11,499	3,103	5,438	2,958	5,677	5,822	6,414	5,085
Proportion to Production	43%	91%	63%	20%	49%	38%	87%	26%

The proportion to total production is much higher in the case of fine and machine-milled rice than in the case of bold (coarse) or hand pounded rice. The production of rice has been almost stationary or declining since the Great War although there is no evidence of any definite or consistent trend. The Crop Planning Sub-Committee in 1934 however, opined that it would be wise to call a halt to a further expansion of the rice area in the country and also recommended the imposition of a moderate import duty. A protective duty of 12 *as.* per maund on broken rice was accordingly imposed in April 1935 to check the rising imports. The Crop Planning Conference also recommended the formation of a Standing Committee of the Imperial Council of Agricultural Research on rice, which has been functioning since then.

The decision of the Crop Planning Conference to put a halt to any further expansion of the rice cultivation was taken in view of the world situation and the export markets for Indian rice. Before the separation of Burma, it is true, that India was the largest exporter of rice in the world but her average exports seldom exceeded 7 to 8 per cent of her total production. Our exports became neg-

1. Report, p. 7.

ligible since the separation of Burma, being about 1 per cent of the total production and have now been prohibited altogether. The preference therefore under the Ottawa Agreement, which was accorded to Indian rice was of no substantial benefit particularly so, as our rice is in no way inferior to the Spanish or American product. There is as a matter of fact no room for giving attention to an export market for rice.

The problem of rice production is that of shortage between internal supplies and requirements, which is growing wide with every increase in population. It may be illustrated by the fact that the average *per capita* production of rice in Bengal during the census decade of 1911-12 to 1920-21 was 384 lbs. It declined to only 283 lbs. for the years 1940-41 to 1942-43. Even, if we take the normal production of Bengal at 8½ million tons into consideration, the *per capita* production comes to 314 lbs. only *i. e.* 70 lbs. less today than it was 30 years before.[1] The country's requirements of rice have been estimated at 25 to 27 million tons per year whereas the production under favourable crop conditions on the basis of a normal acreage is estimated at a maxium of 25·5 million tons. The country was therefore importing large quantities of rice each year mostly from Burma equal to about 5 to 7 per cent of the total rice production in the country. The imports in the year 1939-40 amounted to more than 2·4 million tons. The main deficit areas are Bengal, Bihar, Cochin & Travancore, Bombay and Madras. The cessation of the Burma rice therefore, had an immediate adverse effect on the rice position in the country. The production of rice in the country needs to be substantially increased, but considering the present low average yield per acre, efforts should be made to meet the country's requirements by better cultivation rather than by increasing the acreage under rice. Again, it should be remembered in planning the dietary of the nation that milled and polished rice is after all a very poor food and a balanced diet may require less rather than more of it. Still full possibilities should be considered of large-scale substitution of other foods for rice in the habitual dietary of the population.

Wheat:—Before the Great War, India contributed about 10 per cent to the world production of wheat. Since then the production of wheat has been more or less constant in the country until the

1. Speech of Sir M, Aziul Haque in the Central Legislative Assembly on Aug. 9, 1943.

year 1934-35 while the world production increased from 100·6 million tons in 1909-13 to more than 22 million tons in 1930-34. The country's contribution to the world production has thus fallen to less than 8 per cent. In the pre-war year 1938-39 the world production of wheat compared with 1925-26 was shared as follows:—

World Production of Wheat in 1,000 Quintals

	1925-26	1938-39
British India	87,213	107,672
U. S. A.	223,855	253,327
Canada	117,220	95,259
Argentine	66,142	87,009
Australia	37,015	41,096
U. S. S. R.	215,240	?
France	79,295	94,000
Germany	325,95	55,780
Roumania	28,721	48,214

In India, 96 per cent of the total wheat crop is grown north and west of a line drawn across the Peninsula from Bombay to Calcutta with Sind, C. P., Punjab, U. P. and Bihar as the main areas of its concentrated production. The table given below shows the respective shares in acreage and production of wheat of the various parts of the country.

	Area Million acres	Percentage of All India	Yield Million Tons	Percentage of All-India
Punjab	9·4	28·2	2·9	31·2
U. P.	7 5	·	2·6	28·0
Central Provinces	3·4	10·2	·7	7·5
Bombay	1·6	4·8	·3	3·2
Sind	0·6	1·8	·2	2·1
Other Provinces	2·4	7·2	·8	8·6
Total Br. India	24·9	75·0	7·5	80·6
India States	8·3	25·0	1·8	19·4

The crop is largely grown for direct consumption and the amount actually retained in the villages varies considerably from 70 per cent in the dense wheat growing area in the north of the Central Provinces to about 60 per cent in the Punjab and Jammu, between 50 and 55 per cent in the United Provinces and Bengal, and a little more than one-third in Bihar and Sind. Approximately 45 per cent of the total crop grown in India is retained in the cultivator's village[1].

An export trade had been developing in wheat since the opening of the Suez Canal in 1870 and in the quinquennium preceding the Great War 14 per cent of the total production was exported at an average. Since then the expansion of wheat cultivation in both the exporting and importing countries abroad and the increase in the internal demand in the country resulted in a gradual shrinkage of the export trade in wheat. In the year 1940-41 the exports amounted to only about 0·4 per cent of the total production and have now been prohibited since the food crisis in the country. During the period of the slump, we not only lost our foreign markets of wheat, but competition was so severe that a protective import duty had to be levied under the Wheat Import Duty Act at Rs. 2 per cwt. in March 1931. It was lowered to Re. 1-8 in April 1935, to Re. 1 in April 1936 and lapsed on 31st March 1937. It had however to be revived in January 1939 at Re. 1-8 per cwt. and reduced to a nominal figure of annas 2 per cwt. in September 1941. This last measure was taken to arrest the deterioration of the food situation in the country, but the Australian wheat as expected failed to flow in the country due to the exigencies of the war.

The production of wheat has failed to keep pace with the increase in the population. The acreage has expanded from 22 millions in 1895-96 to 1899-1900 to more than 30·55 millions in the pre-Great War quinquennium and to 34,389,000 in 1935-36 to 1939-40. It stood at 34,298,000 in 1942-43. The total yield however, has not increased correspondingly. From the pre-war average of 9·66 million tons, it dropped to 8·90 million tons in 1925-26 to 1929-30 and stood at 10·13 million tons only for the quinquennium ending with the year 1939-40. On the whole, in spite of the reduction in exports, the net supplies *per capita* of wheat available for

1. Report on the Marketing of wheat in India, p. 16.

consumption have decreased and now fall short of the requirements. Shortage is especially felt in the deficit provinces and the Government was obliged on the recommendations of the Food Grains Policy Committee to import foreign wheat.

To augment wheat supplies of the country, reliance should not be placed on foreign markets in the post-war period. There is considerable scope for the expansion of wheat production within the country. The average annual yield of wheat in India is about 600 lbs. per acre at present as compared with the pre-war average outturn of 724 lbs. and more than 1100 lbs. in Canada and Europe. In Punjab, the maximum yield on irrigated fields comes to more than 1000 lbs. There is thus a considerable margin for increasing wheat production without bringing more land under its cultivation. Dr. Burns in his note[1] forecasts an increase of 50 per cent in the production of wheat. He estimates that the present yield can be increased by 30 per cent by better cultivation only *i.e.* 20 per cent by increasing manure and 5 per cent each by improving varieties and by protection from pests and diseases. Better irrigation facilities may add according to modest estimates at least another 20 per cent. At present not more than two-fifths of the total area under wheat in British India is irrigated. There is also a need for the extension of wheat cultivation in Peninsular India and Bengal.

Millets:—The two main varieties of millets grown in India are Jowar and Bajra. The former covers as much area as wheat and the outturn too does not lag behind being about 9½ million tons. It is largely grown in the South and Central Provinces usually without any artificial water supply except in some cases in Sind, Punjab, Madras and Bombay. Out of some 21 million acres under Jowar in British India, Bombay has more than 8 million acres, Madras 4·66 million acres, C. P. and Berar 4·53 million acres and the United Provinces 2·22 million acres. It is of little importance elsewhere. It is the staple food of the cultivators and its output was more than doubled since 1910-15 in the period 1925-30. The all-India acreage has declined since then from 35 million acres in 1929-30 to 33·8 million acres in 1938-39. Its great advantage lies in that it is good fodder crop as well. The succulent stalks of certain varieties are especially grown for green fodder, and an exten-

1. *Opp. cit.*

sion of this cultivation is very desirable in the interest of dairying in the country.

Bajra is another important millet occupying in the country as a whole about half as much area as Jowar, one-sixth of which is to be found in the Indian States. Bombay has the largest acreage under Bajra followed by Punjab, Madras and U. P. in respective order. Its cultivation increased by 25 per cent from 1910-15 to 1925-30. It had been more or less stationary since then, but has again increased considerably during the present war.

Millets are grown mainly for domestic consumption giving food alike for man and cattle and can be grown in large parts of the country without any irrigation and with little cultivation or manure. These are the poor man's crop in every sense of the term and may well be used to bring sub-marginal areas under cultivation as the expenses of growing are little. It is considered likely that the yield of Jowar can be improved by 20 per cent.

Grams and Pulses:—There is a wide range of pulses grown in the country. The main pulse gram covers some 13 million acres in British India and since it is essentially a crop grown almost without any irrigation the acreage under it records considerable variations from year to year according to seasonal conditions. Similarly the outturn varies to a great extent from year to year. Its cultivation increased from 13 million acres in India in 1929-30 to about 17 millions acres in 1938-39 but the out-turn for the later year was only 2·5 million tons as compared with more than 3 million tons in the former case. During the present war its cultivation has extended further. It can easily be grown as a second crop after millets provided the rainfall towards the end of the season is good. The United Provinces, Punjab, C. P. and Bihar are the main gram producing areas of the country.

The benefit of the cultivation of pulses is two-fold. Firstly, the pulses help to balance the diet by supplying the protein element as against the starch of rice. On the whole, they give more calories per ounce than cereals, in particular, soya bean and gram. Secondly, their cultivation enriches the soil on acconnt of their power to absorb nitrogen from the air through their roots. According to Dr. Aykroyd a well balanced diet should contain considerably more of pulses than taken ordinarily at present.[1] It is there-

1. Sir John Russell's Report *opp. cit* p. 21.

fore, desirable, that the cultivation of pulses should be widely extended in the post-war period.

Barley:—The cultivation of barley is confined to Northern India, and out of some 6·5 million acres under it, more than 4 million acres are in the United Provinces, 1½ million in Bihar and Orissa, 630,000 acres in Punjab and 133,000 acres in the N. W.F.P. The barley grown in the country is almost entirely 6 rowed; and 2 rowed varieties, usually in demand for brewing purposes, do not give sufficiently good yields to justify their cultivation. It has therefore never been practicable to capture the foreign market to any considerable extent. Let aside the consideration of an export trade an improvement in quality is necessary even for internal requirements so that the prospects of manufacturing malted foods in the country may be placed on sound footings.

Sugarcane:—Out of the world cane sugar production of 17·39 million tons, the average for the years 1936-37 to 1938-39, India contributed, according to the figures published in International Sugar Statistics, 3·20 million tons *i.e.* about 18·4 per cent. But the report on the Marketing of sugar in India points out that it is an underestimate and the correct tonnage would be 4·53 million tons. On this basis, the country produces more than 26 per cent of the world cane sugar. The table below gives the figures as published by the International Sugar Institute—

World cane sugar production in Million tons.

	Average 1926-27 to 1930-31	Average 1936-37 to 1938-39
India	1·82	3·20
Java	2·72	1·42
Phillipines	0·76	1·01
Cuba	4·02	2·75
Hawaii	0·75	0·80
Formosa	0·67	1·13
Brazil	0·97	1·05
Others	4·17	6·03
Total	15·88	17·39

More than 90 per cent of the cane area is concentrated in the sub-tropical parts of Northern India, more than 50 per cent being within the confines of the United Provinces. The table given below shows the respective share of the different parts of the country in the cultivation of sugarcane:—

Sugarcane Acreage 1935-36 to 1939-40.

	Area under sugarcane in 1000 acres.	Percentage to.		Average cane yield per acre in maunds.
		Cultivated area.	Total cane area.	
United Provinces	2,120	5·9	53·2	361
Punjab	534	1·6	13·5	206
Bihar	417	2·3	10·5	304
Bombay	122	0·3	3·1	577
Bengal	317	1·4	7·9	451
Madras	114	0·4	2·8	648
Others	359	....	9·0	200 to 600
India	3,981	1·8	100	367

Obviously, there is mal-distribution of the sugarcane acreage as the yield per acre is much higher in the tropical parts of Southern India as compared with the Northern. The main reason seems to be that irrigation facilities are not generally available in the South. With the development of irrigation facilities any extension of the sugarcane area in a planned system of crop economy should take place in the South. The average yield per acre compares very unfavourably with the yields in other countries *e.g.* with 1446 mds of Java, 1160 mds. of Peru or 1515 mds. of Hawaii.

Sugarcane is primarily a cash crop, and the cash returns per acre from it are estimated to be ordinarily 5 or 6 times greater than from other staple crops such as rice, wheat or cotton.[1] The marketing survey based on the period 1935-36 to 1938-39 shows that about 61 per cent of the sugarcane is converted into *gur*, 17·4 per

1. Report on the Marketing of sugar in India. p. 3,

cent is utilized by the vacuum pan factories, 4·5 per cent is used for the manufacture of *khand*, 6·6 per cent for seed, 1·1 per cent for stock-feeding and 8·5 per cent for chewing and juice drinking.

Until recently, India was debarred from exporting any sugar by sea outside the country except to Burma under the terms of an International Sugar Convention of 1937. Practically speaking in spite of having approximately half of the world sugarcane area, say in the early years of this century, the country used to import large quantities of white sugar. In 1929-30 the imports amounted to more than 9,39,000 tons. A protective duty of Rs. 7-4 per cwt. was levied under the Sugar Industry Protection Act 1932. The industry has been revolutionized since then, the number of sugar factories having increased from 32 in 1931-32 to 156 in 1939-40 with an average producing capacity of 705 tons per day.The production of factory sugar was about 1·2 million tons in 1939-40 as against the average of 42000 tons per year in 1922-23 to 1927-28. The country has become self-sufficient in matter of sugar and its imports are now nominal. For the present, the Government has also lifted the ban on the exports of sugar, but it is doubtful whether we shall be able to compete in the foreign markets in the post-war period. The two great limiting factors are the low average yield per acre of sugarcane and the low percentage of recovery of sugar in the country.

The area under sugarcane rose from about 3.5 million acres in 1941-42 to about 3.7 million acreas in 1942-43 representing less than 2 per cent of the total cultivated. It has increased from some 2.5 million acres in 1929-30 to more than 4 million acres in 1935-36 to 1937-38. Between 1930 and 1940 the area under cane increased by 44 per cent and the yield of cane per acre by 15 per cent. The acreage in 1936-37 was 4.6 millions, which eventually caused a heavy fall in the prices of both sugar and cane due to over-production. This was reflected in the curtailment of the area in the next two years. It thus declined to 3.3 million acres in 1938-39. The prices improved again and so did the area under cane, which increased in 1939-40 by 16 per cent over the area in 1938-39. There was over-production again and the Indian sugar industry was faced with a very severe crisis. This data suggests that considering the improvement in yield, no further expansion of sugarcane cultivation is desirable. But it should not be forgotten that the average per capita consumption of sugar in India is still low being 7·2 lbs. of sugar plus 20·1

lbs. of *gur* for the country as a whole. It is about 100 lbs. of sugar per capita in the United Kingdom, U. S. A. and Australia. We may therefore expect a rise in the demand for sugar and *gur* in the country simultaneously with industrial and agricultural development in the post-war period. This should however be met by increasing the yield per acre rather than by extending the area under cane.

Vegetables and Fruits:—The total area under fruits and vegetables including root crops does not exceed 4 million acres in British India and represents only about 2 per cent of the total cultivated area. It is almost evenly distributed. It is however deplorable that the acreage under fruits and vegetables is registering a downward trend.

Area under fruits and vegetables in India[1]
in millions of acres,

1914-15 to 1918-19	5.70
1919-20 to 1923-24	5.42
1924-25 to 1928-29	5.06
1929-30 to 1933-34	5.00
1934-35	4.82

The decline has been marked in Madras, Bihar & Orissa, Bengal and Bombay, being less in the United Provinces and the Punjab, whereas the area under these has actually increased in the Central Provinces and the N. W. F. P. The result has been an ill-balanced diet, poor vitality and low cash returns per acre.

Vegetables, besides being more paying to the farmer than the cultivation of ordinary crops, are an important source of supplying vitamins and mineral constituents in the ordinary diet, which suffers greatly at present from a deficiency of these. Potato is probably the most widely grown of all the vegetables in India. The area under potatoes is only about 450,000 acres being less than 1 per cent of the world acreage under it. Out of some 6,010 million mds of potatoes produced in the world before the present war, India produced only 49 million maunds i.e. 0.8 per cent of the total. The main potato producing parts are the United Provinces, Bihar and Bengal. The average yield of potatoes per acre is 109 maunds in India as compared with 224 mds. in Belgium. 183 in the United Kingdom, 178 in Germany and 145 in Austria. The annual *per*

1. Sir John Russell's report *opp. cit* p. 38.

capita consumption comes to 8.6 lbs. only in the country. In U. S. A. and Germany it is 140 and 440 lbs. per annum respectively. It varies from 28 lbs. in the United Provinces to 2 lbs. in C. P and Madras. The situation is equally unsatisfactory with regard to the other vegetables. Leaving aside the gram and rape leaves the cultivator hardly takes any leafy vegetable. The former of course give a very high caloric value per ounce but are not available all the year round or in all parts of the country alike. The problem of growing more of leafy vegetables is very urgent.

The same holds good with regard to the cultivation of fruits, which gives employment to far more labour and yields many times more profits than the cultivation of grains, fibres or oil-seeds. The extension of the area under fruits is likely to make its own contribution to the problem of unemployment and under-employment in agriculture. Large scale fruit growing also gives rise to many subsidiary industries. From the nutritional point of view nothing is more important than the inclusion of more fruits, milk and milk products in the ordinary diets of the people.

We therefore hold that efforts should be made for planting sufficient orchards in each village, the areas under which should increase many times the present acreage. The agricultural graduates may even be given subsidies to settle in villages and plant fruit gardens. At the same time, the 'Grow more vegetables' campaign should be intensified so as to develop market gardening for vegetables to its fullest extent. The limiting factors in the way of the extension of the area under fruits and vegetables are the lack of the irrigation and manuring facilities in general, and that of capital and resources at the command of the cultivator in particular.

Oil-seeds:—These occupy about 17 million acres in British India concentrated chiefly in Madras, Central Provinces, Bihar and Orissa and Bombay. It is however difficult to ascertain the exact area as these are often sown in rows among other crops. The main varieties grown in British India are groundnuts (6.0 million acres), rape and mustard (3.70 million acres), linseed (2.33 million acres), sesamum (2.25 million acres), cocoanut and castor. Oil-seeds occupy a unique position in the crop economy of the country. Originally their cultivation was encouraged by an export market but now their importance is recognised more for the nutrition of man and cattle in the country and fertility of the soil. Cosequently, export of

oil-seeds has suffered particularly during the slump as may be seen from the table given below—

Oil-seeds: Total exports from ports in British India
Triennial averages in thousands.

	Seed		Oil		Cake	
	1927-28 to 1929-30	1933-34 to 1935-36	1927-28 to 1929-30	1933-34 to 1935-36	1927-28 to 1929-30	1933-34 to 1935-36
Groundnuts	705	490	237	427	161	215
Castor	116	70	507	1,319	....	....
Linseed	209	261	97	71	69	55
Rape	62	43	246	265	47	29
Sesamum	17	7	146	127	....	....
Cotton seed	114	3	....	....	....	....

The exports of oil and cake have been rising while that of seeds have declined. This tendency though accelerated by the slump was not a peculiar feature of it. Our foreign market in oil seeds was shrinking even before. The figures in the following table explain the situation:—

Annual Exports of oil seeds from India
Quinquennial averages in thousand tons.

	1909-1910 to 1913-14	1914-15 to 1918-19	1919-20 to 1923-24
Linseed	379	271	251
Ground nut	212	119	195
Rapeseed	273	91	206
Sesamum	119	33	28
Castor	114	89	48
Copra	31	16	7
Cotton	240	69	155
Mustard	4	3	2
Mowa	29	3	8
Poppy	33	5	6
Total	1453	708	923

The present war has resulted in a further shrinkage of export trade in oil seeds. Besides, considering the fact that it is uneconomical to export oil-seeds, planning for the future should be done with reference to the internal demand only. The table given below shows the importance of exports in the production of oil seeds in the country:

Figures in tons for 1939-40

Seed	Production	Export
Castor	44,000	40,437
Ground nuts	2,327,000	548,564
Linseed	403,000	219,212
Rape seed	1.104,000	21,765

Let us now examine the internal demand for oil-seeds and the scope of its expansion. Taking groundnuts first we find that in the pre-war years the annual consumption stood at about 14 lakh tons. In 1942-43, the out-put increased to 27.14 lakh tons and 21 lakh tons were consumed within the country. The development of the hydrogenated vegetable oils industry in the form of *Vanaspati* may result in a further rise in the internal demand for groundnuts and there is no ground to curtail its present production. The ground nut cakes provide a very good manure while its cultivation improves the productivity of the soil.

According to the report on the marketing of linseed in India, the country produces about 4.75 lakh tons of linseed on about 4 million acres valued at about Rs. 5 crores. Only about 20 per cent is retained in the villages and more than two lakh tons were exported annually. Most of the linseed available for consumption in India is used after crushing as edible oil particular in the Central Provinces and Central India States. In the world market, Argentina dominates, producing about two-thirds of the world crop and the average yield per acre In India at 275 lbs. is less than half the average yield in Argentina. Its output has declined during the war time being in the vicinity of 3.5 lakh tons at present. There is however a considerable scope for the expansion of internal requirements both for edible and industrial purposes. It is an important

raw material for the production of hydrogenated oils, boiled oils, vulcanised oils, paints and varnishes etc.

With reference to castor, it may be said that its exports are rapidly dwindling due, in particular, to the emergence of Brazil as a competitor since 1935. But there is a very great scope for the use of castor oil as a lubricant within the country. With the development of industries in the post-war period, we will require more of lubricants and hence the cultivation of this important oil-seed may have to be extended.

Indian diets are generally deficient in fats and oils; and therefore the importance of extending the cultivation of oilseeds in general cannot be over-emphasised. Considering the industrial uses, there is still considerable room for the development of industries using oil-seeds as raw materials. These industries include those for the manufacture of soaps, lubricants, paints varnishes, oil-cloth, candles, substitutes for butter and *ghee*, hair oil etc. All these industries are still in infancy. The extension of the oil-seeds cultivation will be helpful in providing a more balanced diet to our people, in meeting the needs of dairy-farming, and in making cultivation more intensive in the post-war period. Considering the increase in demand in future for a balanced diet and industrial and agricultural expansion the Indian Finance rightly holds that 'we will not be hitting too much if we begin to plan for doubling the present outturn of our oilseeds.[1]

Cotton: India is the second largest cotton producer in the world next only to the U. S. A. which too, now, in point of acreage stands almost side by side with this country, but produces more than two and a half times as much cotton. In other words, the yield per acre in India. is relatively speaking very low being only 75 to 100 lbs. of lint cotton as compared with about 200 lbs. of the United states and 300 to 400 lbs. of Egypt. In the pre-war year of 1937-38 the total area under cotton was 25·8 million acres of which more than 10 million acres was in the Indian States. The respective production of British India and Indian States in the same year was 3.71 and 2.02 million bales giveing a total of 5.73 million bales. More than 50 per cent of the country's cotton crop is short staple and hence unsuitable for the manufacture of cloth of higher counts so that the country has been obliged even to import long-staple

1. Indian Finance, Annual Supplement 1943 p. 55.

cotton. The main changes in India's cotton economy may be studied from the following tables:—

Annual Area and Yield of cotton in India

Average Figures in millions for the quinquennium ending

	1899-1900	1909-10	1919-20	1929-30	1939-40
Acres	13.80	21.13	21.57	25.81	24 20
Bales	2.30	3.96	4.36	5.47	5 55

Average annual Exports of raw cotton in lakhs

	1909-10 1913-14	1914-15 1918-19	1919-20 1923-24	1929-30	1939-40
Tons	4 30	3 91	5.21	7.27	5 26
Value	Rs. 33,28	33,63	64,74	65,08	30,11
% to total production	56	51	61	75 (1930-31)	59·6

The characteristic feature of the cotton economy of India, prior to the present war, was that the country was producing 60 per cent to 75 per cent of its crop.for foreign markets, valued at about Rs 65 crores in the pre Depression period. The exports had risen from the pre-Great War average of 4·30 lakh tons valued at Rs. 33 crores to 7·27 lakh tons in 1929-30 valued at more than Rs. 65 crores. The record level was reached in the year 1925-26 when exports valued at Rs. 95 crores. The slump effected the value and quantity of our cotton exports very adversely and the lowest post-war figures was touched in the year 1932-33 at 3·68 lakh tons valued at Rs. 20·37 crores. The Indo-Japanese Trade Agreement (1934) stimulated exports again by linking the quantity of imports of Japanese piece-goods in India with the intake of our cotton by Japan at 1 million bales for a basic allotment of 325 million yards of piece-goods. The agreement was renewed in 1937 but terminated in 1941. The effect of these trade agreements was that Japan, which took ordinarily about half our cotton exports, renewed its purchases after a six months boycott of Indian cotton, ending January 1934 and launched as an act of reprisal against the country's decision to abrogate the Trade Convention of 1904. But since the commencement of the Sino-Japanese war, Japan's demand again

declined from 2·33 million bales in 1936-37 to 1·21 million bales in 1938-39 and 1·06 million bales in 1939-40. The purchases of the United Kingdom, however increased from 3,42,000 bales in 1933-34 to 6,10,000 bales in 1936-37 due to the stimulus given by the Bombay Lancashire Trade Agreement of 1933. These however declined again to 3,95,000 bales in 1937-38 to improve again in the next year to 4,11,000 bales. At the same time, China also increased her purchases of Indian cotton and took 6,81,000 bales in 1939-40 and 7,54,000 bales in 1940-41. In this war, the country first lost its continental market and then the Japanese market. The loss was made good in the beginning by the increased off-take on the part of the United Nations; but later on, the shipping problem and the exigencies of the war situation, rendered it increasingly difficult. The net result has been a marked reduction in the cotton exports. These declined from 2·73 million bales in the pre-war year to less than one million bales in 1942-43. The value of cotton exports fell from 24·82 crores of rupees in 1938-39 to less than 6 crores of rupees in 1942-43. To sum up, foreign markets no longer play any substantial part in the cotton cultivation of the country.

What about the imports? A reference has already been made to the deficiency of the long staple cotton, the intake of which from foreign markets has increased considerably during the present war with the increased activity of the textile industry from some 8 crores of rupees worth in 1938-39 to more than 15 crores of rupees worth in 1942-43. To conserve domestic supplies of long staple cotton, it was notified on 19th October 1943 that "exports of raw cotton of Indian origin to permissible destination will be allowed only if it is of staple lengths below 3/4"."

But whereas the present war has witnessed the loss of foreign markets, the consumption by the mills in India has touched a record figure during this very period. It has increased from some 3 million bales in 1938-39 to 4·28 million bales in 1942-43 providing an outlet for the surplus cotton, which previously used to be purchased by the belligerent countries.

In brief, the structure of Indian cotton economy has changed from an over-dependence on foreign markets towards self-sufficiency, though the target in this respect has not yet been hit. The change has been brought about by the increased mill consumption on the one hand and the reduction of the area under cotton on the

other. It is estimated that the cotton crop of 1942-43 has been the lowest on record in the post-war period, grown over an area of 18·81 million acres and giving an yield of 4·55 million bales. This represented a reduction of 22 per cent in the acreage and 26 per cent in the yield over the crop of the previous year. A further reduction of 4 per cent is estimated in the acreage of 1943-44. The output of the short-staple cotton, which formerly used to be exported in bulk, has fallen still further due to the improvement in the proportion of the long-staple cotton in the total cotton production of the country. The production of short-staple varieties of 11/16″ and below in the season 1942-43 aggregated only 1·82 million bales out of a total output of 4·55 million bales, as against 3·70 million bales in 1940-41. The out-put of the medium and long-staple varieties has increased from about 2 million bales in 1940-41 to more than 2·7 million bales in 1942-43. The output of cotton of staple length of 7/8″ and above was only 36 per cent of the total in 1940-41. It is now more than 60 per cent.

A further reduction in the cotton area and extension of the long-staple cotton, the present out-put of which at 270000 bales is far short of the country's requirements should continue to be the objective of our cotton policy. At the same time, efforts should be made to increase the average yield per acre.

Jute:—India holds the world monopoly for the commercial cultivation of Jute. The area under it has increased from 2·03 million acres in the last quinquennium of the last century to 3 million acres in 1910-13 to 1914-15. It fell again during the Great War and was only 3·28 million acres in the quinquennium ending with the year 1924-25. In the pre-Depression period, its cultivation again received a stimulus but suffered heavily in the period that followed. Ninety per cent of the total crop is grown in Bengal, and the remaining quantity is contributed by Bihar, Orissa and Assam.

During the depression, the average gross income from the crop amounted to only Rs. 15 crores for the period 1930-34 as against Rs. 44 crores, the average for the period 1919-29. The Bengal Legislative Council appointed a Jute Enquiry Committee and following its recommendations the Bengal Government announced in September 1934 a scheme of voluntary restriction and carried on propaganda in favour of it for three successive seasons without any

appreciable success. The state of over-production continued and it was only in 1940 that the Bengal Jute Regulation Act was passed. The Government carried out a survey of the lands under the jute crop in 1939-40 and granted licences to growers. At the same time, it was found necessary in the middle of August 1939 to fix the minimum price for jute by an ordinance. It was decided that the area under Jute in 1940-41 in Bengal be restricted to one-third of the area for the previous season. The war however, had made changes in the jute out-look and the prices were fluctuating violently. The crop for the year 1940 was the largest on record at 5·67 million acres in area and 13·19 million bales in out-put. The acreage for the year 1941-42 had to be curtailed to about 55 per cent of that of the previous year. There was a further reduction in area in the year 1942-43 to 2·60 million acres *i.e.* less than half of the crop of 1940-41.

Exports play an important part in the jute economy. These, both raw and manufactures, account for about 50 per cent of the total value of exports from Bengal and contribute more than 25 per cent to the total value of exports from India. The exports of raw jute fell sharply from 807000 tons in 1929-30 to 568000 tons in 1939-40. In the pre-Depression period about half of the crop used to be exported abroad. The proportion fell to about one-third during the slump but improved again to 53 per cent in 1936-37, it was 33 per cent again in 1939-40 and 1941-42 but only about 10 per cent in 1940-41. The value of the exports of raw jute has declined from 13·40 crores of rupees in 1938-39 to Rs. 7·85 crores in 1940-41 and Rs. 9·01 crores in 1942-43.

On the whole, there is a considerable surplus of jute crop available each year for exports. It is not in the best economic interests of the country to allow exports of this raw material of which it has the monopoly and at the same time let its jute industry suffer from depression. It is therefore, suggested that the area under the jute crop should be curtailed to the maximum requirements only of the jute industry in the country so as to leave no surplus for exports. Such a measure will have a healthy effect on the jute industry as well. The Indian Central Jute Committee, established since 1937, should keep this very objective in view so as to develop all possible outlets for the jute manufactures.

Fodder Crops:—One of the limiting factors in the improvement of live-stock and the development of dairying in the country is the insufficiency of food for cattle. One course, if it were feasible, would be to drastically reduce the number of animals. But we may still require more animal food for the adequate feeding of those that will remain. Reliance cannot be placed on grazing areas, which are associated either with forests or with cultivable wastes. These latter, which are the more important, may have to be brought under the plough in the post-war period. Ninety per cent of the live-stock in the country have access only to non-forest grazing areas, which are of little use, as they remain open and unfenced with animals wandering freely. There is very little opportunity under the present system for any grass to grow on these areas. The only substantial food, available for animals therefore in the country, consists of the straw and stalk of the grain crops. The cultivation of fodder crops is very much limited and that too is almost confined to Punjab, Bombay, and the United Provinces. About 10 million acres are under fodder crops in the country, of which more than half are in Punjab, about 2 million acres in Bombay and 1½ million acres in the United Provinces. The Agricultural Departments have been successful in introducing improved fodder crops *e.g.* berseem, which adds to the fertility of the soil as well.

An increase in the area under fodder crops is as urgently required as any other improvement in the crop economy of the country. "A wider introduction of fodder crops into Indian agriculture would probably effect great improvement in yields and in total output. Moreover food for the animals would mean more manure and enhanced fertility of the soil. The extension of fodder cropping was a prime factor in the improvement of British agriculture and the additional yields of grain more than compensated for the area taken from grain and used for this purpose."[1]

Fodder cultivation should play an important part both as a catch crop and to bring new areas under cultivation.

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[1] Sir John Russell, *Opp. cit.* p. 46.

CHAPTER VIII.

Animal Husbandry and Dairying, etc.

Density of Live-stock:—Numerically, India possesses the largest number of bovines in any country in the world, carrying one-fourth of the world's stock of cattle and two-thirds of its stock of buffaloes. The fifth census of live-stock in India, held in 1940, is incomplete as the United Provinces and Orissa were not able to take part in it. Adding to it therefore, the figures of 1935 for these two provinces, it is noticed that there are in the country 162 millions of cattle, 45 million buffaloes, 47 million sheep, 48 million goats, 2·2 millions horses and ponies, 7 million mules, 2 million donkeys, 1 million camels, and 2·7 million pigs. Besides these, there are 66 millions of poultry. The average density of live-stock per 100 acres of net cultivated area comes to 22·1 bullocks, 17 cows, 7 cow-buffaloes, ·9 pigs and 29·3 of poultry. This is really very dense, and, in contrast, we have per 1000 hectares only 197 cattle, 230 sheep and 147 pigs in Europe excluding U. S. S. R., and some 48 cattle, 49 sheep and 20 pigs in the world taken as a whole.[1] This heavy density of bovine population in India has not been helpful in raising the standard of living, but, in a way, has even indirectly lowered it. It has been brought about by the inefficiency of its own numbers coupled with that of agriculture and has a cumulative adverse effect. The Royal Commission on Agriculture in India opined that the country was attempting to maintain an excessive number of cattle and even found the existence of a vicious circle. They observed: 'The worse the conditions for rearing efficient cattle are, the greater the number kept tend to be. Cows become less fertile, and their calves become undersized and do not satisfy cultivators, who, in the attempt to secure useful bullocks, breed more and more cattle.....As cattle grow smaller in size and greater in number, the rate at which conditions become worse for breeding good live-stock is accelerated. .....The process has gone so far, India has acquired so large a cattle population and the size of the animals in many tracts is so small that the task of reversing the process of deterioration and of improving the live-stock of this country is now a gigantic one; but on improvement in cattle depends to a degree that is little

1. League of Nations: European Conference on Rural Life 1939 Document No. 5, p. 34.

understood the prosperity of agriculture, and the task must be faced.'[1]

The characteristic stock of the ordinary Indian cultivator consists of cattle and buffaloes, while sheep and goats belong to the nomadic flock-owners or to the landless villagers, the pigs to the untouchables, and mules, donkeys, and camels to the itinerary dealers in the village. The farmer in India keeps cattle primarily for the purpose of draught for the plough or the cart, although in most parts of the world food and milk are the primary purposes for which they are kept. At an average, a pair of bullocks is kept for about every 9 acres of land under cultivation. This is really too much when we remember that in Gharbeih, a high standard of cultivation is maintained by the Egyptian fellaheen without any mechanization of farming by keeping only 3 bullocks at an average for each 100 acres of gross cultivated area. That the number of bullocks kept is excessive in India may be judged by another fact as well, *viz.*, the extent of idle days for the bullocks on the farm. The farm Accounts in the Punjab for the year 1938-39 published by the Board of Economic Enquiry show that at an average the cultivation work per pair of bullocks does not exceed 118 days in the year. Adding to it casual labour and work done outside, it is noticed that the bullocks have no work to do for about 17 days in the month. Conditions elsewhere are not better; on the other hand, in most cases as only a single crop is raised during the rainy season the bullocks may be unemployed for about three-fourths of the days in a year. Even at a very modest estimate, it can safely be put, that at least half the bullocks in the country are redundant. But, as has already been pointed out the operation of a vicious circle tends to multiply the present number even further. There is another consideration as well—so long as the number of holdings remains what it is, since there ought to be, under the present system of farming in the country, ordinarily a pair of bullocks on each holding, it is not a practicable proposition to reduce the number of bullocks. For reducing the size of the present cattle population therefore, holdings shall have to be combined into proper farming units. To put the problem briefly, a petty holding and an inferior pair of bullocks go together. We cannot eliminate the one without doing away with the other. The

1. Report, p. 191.

question of reducing the number of bullocks and improving their efficiency is linked up closely with the central problem of the rationalization of small scale farming in the country.

Importance of Cattle:—His Excellency the Viceroy, speaking at the All India Cattle Show Society Meeting in 1943 summed up beautifully the importance of cattle in these words: 'Cattle are in a real sense the basis of India's economy and the deep and traditional reverence paid to them by so many millions throughont this country has a very real and solid basis.....In this immense agricultural country which feeds the largest population in the whole world, almost every seed that germinates owes its debt to the work of cattle in ploughing up the soil and almost every grain that is carried to the markets to feed the great urban population is carried there by bullock transport. The health of every child and not only the health but to a very large extent the intelligence of every child and so the whole physical standard of India's millions depend largely on the quality and amount of milk available for children to drink.' Judging by the measure of actual productivity, it may be said at once that it is not commensurate with the size of its population. The productive value is low owing to adverse economic conditions and the lack of a proper organisation of the agricultural industry in the country. Dr. N. C. Wright estimated in 1937 the monetary value of live-stock products at Rs. 1,000 crores out of Rs. 2000 crores, the total agricultural income of the country. This is obviously a very rough estimate and is composed of Rs. 300 crores the value of milk and milk products, Rs. 400 crores the value of cattle labour, Rs. 270 crores the value of cattle manure, and Rs. 40 crores the value of hides, skins and offals. The contribution is apparently impressive but it is at present only a fraction of what it ought to or can be. To raise this contribution to its maximum level we require fewer cattle, improved stock and a reorganisation of the agricultural industry.

Cattle Improvement:—It has already been emphasized that the first objective cannot be achieved so long as the agricultural industry is not reorganised on economic farming units. In general, no cultivator keeps more cattle than what he needs ; he keeps a pair of bullocks because one singly cannot draw the plough, he gives a preference to the inferior pair because his holding is too small to find enough work for the better one, he keeps it throughout the year because his

work is intermittent, even though at long intervals, and he cannot find any other power when his work demands it. To reduce the number of cattle the area under cultivation should first be divided, or better combined, into economic units of sufficiently large size to provide enough employment and food for the cattle to be kept on each. The eventual reduction in the number of holdings may directly diminish the demand for bullocks in the country and ultimately the size of the present cattle population. It has been observed that the area cultivated per yoke tends to be larger as the size of holding increases.' The U. P. Banking Inquiry Committee found that 'there is a close inter-relation between the size of holdings, the class of crops grown, and the number and quality of cattle employed ; and it is this which accounts for the violent contrasts between the cattle in different tracts, from the costly and powerful animals on the large holdings in the western districts, where fodder crops are freely grown, to the miserable and half-starved beasts in the rice-tracts of Azamgarh.' Under-sized holdings tend to breed cattle like field-rats and the only way to check this evil is to combine the former into economic cultivation units.

Better Feeding:—The second essential requisite of planned cattle economy is the improvement of the stock by better management. It implies better and careful feeding. The inefficiency of cattle in India can to a great extent be accounted for by under-nourishment and semi-starvation for which the cultivator, who himself is no better fed, is not always to be blamed. Ordinarily, as has already been noticed, under the present system of farming there is little room for the cultivation of fodder crops and the animal when not working or giving milk is invariably obliged to find its own food outside the farm-stead. It is usually in a state of semi-starvation, and no wonder that its efficiency at an average is very low. Dr. Wright has estimated a total supply of 111 million tons of dry fodder consisting of the straw derived from rice, wheat, barley, bajra and juar and 100 million tons of green fodders in addition to 1·5 million tons of concentrates and 2·3 million tons of cotton seed. If we allow 20 lbs. roughage per day for each working cattle and buffalo and one-third as much to the young stock at least 500 million tons of fodder supplies are required to meet the country's demand at this minimum scale. We do not

1. Our Economic condition edited by Baljit Singh page 35.

produce even half as much. The need for increasing fodder supplies is clear. Grazing cannot be looked upon as a satisfactory source for meeting this shortage for a number of reasons. Firstly, the period during which there is any substantial growth of herbage on grazing lands is strictly limited to the rainy season. Leaving aside 3 to 4 months these waste lands are more of exercise grounds than grazing areas. Secondly, these are so much over-stocked that the yield is hardly substantial. Thirdly, the system under which animal husbandry is based on grazing can be fitted only in a system of 'extensive' farming which the country with its present human and cattle population can ill-afford. Finally, planned agriculture in the country may utilize much of the present culturable wastes for cultivation leaving still less for grazing. There is therefore, no other alternative except to increase the supplies of cultivated fodders for the proper feeding of cattle in the country. Still, considerable areas will remain open for grazing and to get the maximum utility out of these some system of controlled grazing should be adopted. Such a system may require enclosure and rotational grazing with restrictions on the period of grazing and the number of animals. It has been suggested that cultivable waste land not available for cultivation may well be utilized for the provision of fuel and fodder. The Forest Department in the United Provinces hopes to obtain in this way about 600 tons of green leaf fodder and 1,500 tons of firewood per square mile of plantation per annum. Similar conversions of wastes, unfit for cultivation, are strongly recommended. Haymaking and silage offer further considerable opportunities under a system of controlled grazing.

But the total supplies from the grazing areas will not be much and sooner or later, we shall have to increase the areas under fodder crops to a considerable extent. The areas that are going to be reclaimed and improved should as far as practicable be put under the fodder crops, which ultimately should occupy not less than 20 per cent of the cultivated area in the country. This is a very rough estimate and may need revision on the basis of more detailed statistical data. Moreover, it should be remembered that all fodder crops are not equally nutritive or productive. To make the best use of land under cultivation, fodder plants, which are particularly suitable for milk production, will require our most serious attention. Likewise the leguminous fodder crops are of special significance as they enrich the ground on which they grow. Our objective

should be more fodder and better fodder from each acre under fodder crops.

Conservation and better use of the fodder already available is equally important for better feeding. A rational use of every possible scrap of food through conversion, storing, drying and proper harvesting would be necessary. It is necessary that considerable attention should be paid to research and experiments in this connection.

Finally, the available supplies of concentrates are too little and need to be greatly augmented. The most practical way to do it would be to develop the oil-crushing industry in the country to its maximum level so that the supplies of oil-cakes in the country may be many times more than the present out-put. The development of the oil-crushing industry might lead to the cultivation of more of oil-seeds, giving better food for men, more concentrates for animal and more manure for the soil.

Breeding:—No substantial improvement in cattle economy is possible unless measures are adopted to eliminate the bad quality animals and improve the strain by careful breeding. The main methods adopted for the purpose have been two *viz*, the provision of pedigree and improved bulls, and the castration of inferior males. The Royal Commission on Agriculture had calculated a minimum requirement for an annual supply of some 2,00,000 bulls and estimated that the country needs roughly one million breeding bulls. The number of bulls issued annually from Government farms has not been more than 1,000 and the total number of approved bulls at stud in 1935-36 was only about 10,000. This represents a mere fraction of the requirements and the issue of new bulls has been only slightly greater than that needed to replace the existing ones. Taking all types of breeding bulls into consideration, it is noticed that in British India according to the census of 1940, there were 5,43,041 bulls as against nearly 25·8 million breeding cows *i.e.* one bull for less than 50 cows. But most of these bulls were *desi* and therefore need to be urgently replaced. To supply the vast number of breeding bulls the easiest way would be to purchase the village bred improved bulls for distribution, selected from improved cattle tracts. At the same time pedigree bulls should be supplied from the Government breeding farms.

The second method *i.e.* the castration of inferior males is equally necessary together with the supply of improved bulls. The National Planning Committee recommended that legislation on the lines of Punjab and Bombay should be undertaken for sterilizing bulls and ringing cows, which were found to be useless and superfluous. The system of *Brahamini* Bulls is fraught with grave dangers and requires a close scrutiny. Some times, as has been pointed out by the U.P. Agricultural Reorganization Committee 1939-41 even bulls are used instead of bullocks for transport work, a practice which is very harmful in the interest of improved breeding. The Committee has suggested legislation for the compulsory castration of all working bulls. The number of such bulls is considerable in the country and it is suggested that an all-India measure should be adopted to deal with the problem. The number of animals castrated at veterinary hospitals and dispensaries and on tour has been increasing gradually, but the degree of progress achieved differs from province to province. There is certainly an urgent necessity for intensifying castration measures particularly in selected breeding areas, where action should be concentrated. The scheme as adopted in the United Provinces of controlled breeding areas, is certainly more effective than distribution of the few approved or pedigree bulls over wide areas without any concentration. Concentrated breeding together with total castration of all inferior males in the selected area should be the spearhead of our cattle-breeding policy. In this connection the *Eastern Economist* has rightly suggested that 'Improvement can be achieved by the method of dividing the country into areas which may be classed under three major regions, according as the cattle found therein are, in the mass, good, fair or poor. All the better bulls in each region should be selected and distributed for service in areas in that region. Simultaneously, measures should be taken to increase the number of good bulls all over the country so that after some time, region A may be able to spare pedigree bulls in increasing number to region B to grade up local cattle and region B to region C.

'Possibilities for the artificial insemination for the quick improvement of our cattle should be investigated in view of the great success with which it has been practised in the U. S. S. R.'[1] Selective breeding and castration of the inferior males will certainly

1. See Vol. 2 No. 13, p. 485.

go a long way. But the problem of the uneconomic cow may still remain with us in the beginning. With a proper outlook the process of elimination may be speeded up through the abbattoir. At the same time legislation should be passed prohibiting the slaughter of prime cattle of specified breeds. Their elimination, which is going on rapidly, leaving behind the non-descript beasts, is the greatest drain upon our cattle wealth.

Regarding the method it may be said that cross-breeding has not been as effective as selective breeding from indigenous strains. Increasing reliance should therefore be placed on the latter rather than on the former. Making his observations about cross-breeding Dr. N. C. Wright pointed out: 'The immediate results are certainly striking. The first cross (half-bred) gives on an average double the yield of its indigenous dam, while it also breeds more regularly. With further crossing the results have not, however, been so successful. Mating half bred to half bred is of very questionable value ; even if a fixed type could ultimately be obtained (which is doubtful) the amount of 'culling' of unsatisfactory animals would make the method extremely expensive. Back crossing improves the constitution but reduces the milk yield. Forward crossing, on the other hand, while maintaining milk yield is liable to result in a deterioration of physique and in high mortality, particularly among calves.....I am convinced that, however, valuable cross-breeding may be in herds which are under expert control the general adoption of a policy of cross-breeding to improve the yields of country stock would be fatal to the development of sound dairying in India.'[1] Dr. Hammond states, 'Apart from the time it would take, I can find no evidence that mere selection (combined with better feeding) of the local stock would not produce equally good results. There can be little doubt that European stocks, even when bred pure, gradually lose their type'. It is thus clear that cross-breeding serves no useful purpose in the country. As a matter of fact the case for selective breeding out of the indigenous strain becomes unrefutable when it is brought to our notice that by careful selection indigenous strain of Indian cattle can be built up, which are capable of being compared at an advantage with the European or any other outside stock. To illustrate, the improvement in the average milk yield at a Government breeding farm has been more than trebled in two Sahiwal herd within twenty

1. *Opp. cit.* p. 67.

years. At another centre the average lactation yield of the Ferozepore herd has been about 7,000 lbs, being in certain cases even more than 10,000 lbs. There are thus great potentialities of improving the breed by selection.

What should be the objective of our breeding policy ? A superior type of draught animal, a better milch cow, or a good dual purpose cattle ? The Royal Commission on Agriculture opined : 'The type of cow likely to suit the average cultivator would be one capable of rearing a strong calf and of supplying in addition 1000 to 1,500 lbs. of milk per lactation, for household use....We are of opinion, therefore, that the attempt to provide dual purpose cattle, equally suitable for draught and for milking and *ghi* production should only be made in those districts in which the prospects for successful milk production are markedly better than, on the average, they now are ; and that, even in such districts the question whether it is expedient to develop high milk production in cows, or to resort to buffaloes should always receive careful consideration. We are impressed with difficulties confronting the breeder, and we are anxious that dual aims should not complicate his tasks.' Dr. N. C. Wright in his Report also stressed the superiority of the buffalo over the cow for milk and milk products. The former is also growing more popular with the cultivator, for, while the number of cows in the country has hardly recorded any increase during the last 30 years, the number of buffaloes is constantly increasing. Yet the cows exceed she-buffaloes in every province except the Punjab. The latter however have a markedly higher milk yield and higher butter-fat content in milk so that in spite of being only about one-fourth of the number of cows, they contribute 47·5 per cent of the total milk supply in British India. Taking these facts into consideration, the obvious conclusion seems to be that buffalo is the premier milk producing animal of the country and as such the objective of our breeding policy should be to evolve a superior type of buffalo for milk and a superior type of cattle for draught. Such a conclusion however, is based on two presumptions, which are fallacious *viz.*, that cattle is destined to be the sole tractive power of the farmer and secondly, milk production is less remunerative to cultivators than the types of agriculture in which they are already engaged. Both these presumptions are correct at present but may not be so in future. The prospects of co-operative and collective farming with mechanisation,

of more rapid transport, and a much higher portion of urban population, may not remain very remote in the post-war period. Granted that cattle-labour will gradually loose its significance our long range cattle-breeding policy therefore, should not be unnecessarily biased to evolve a superior draught cattle. Regarding the presumption that milk production is less economical than the growing of corn it may be pointed out that if it is so, it is because the former has received little attention and the average annual milk yield of the Indian cow at 500 lbs is too low to give economical results. With better cows, the cultivators throughout the world outside find the production of milk more profitable than the cultivation of grain. The country stands in dire necessity of increasing its milk supply. Moreover, even as compared with the buffalo, the Military Dairy Farms in the country have found the ordinary Sahiwal cow much better. It is therefore held, that, the long range objective of our cattle-breeding policy in the country should be a superior type of milch cow. It will be in consonance with the food requirements of the country on the one one hand and the planned economy of agriculture on the other. During the period of transition, we may give a preference to a dual purpose breed as, for some time atleast, a better draught cattle will be indispensable.

Mixed Farming:—A reorganisation of the agricultural industry is the third requisite for maximising the contribution of animal husbandry to the national dividend. At present the farmer is following a system in which there is much waste of labour, land and capital. He grows merely crops and remains under-employed. The yield is poor and profits at an average are either nominal or negative. There is poverty everywhere with little intensification of farming, and yet, the cultivted area per 100 acres(growing little else except grains)has to support about 200 persons, 55 cattle, 15 buffaloes 26 sheep and goats besides a large number of other live-stock. With such a heavy pressure on soil it is necessary that the out-put per acre should be at its maximum, and the most practical way to do it is to combine farming with animal husbandry so that the contribution of both may be increased. Col. A. Oliver has observed, 'with the increase of population and the progress of scientific management, the ranching type of farming has in fact everywhere given way to a more intensive system of which the raising of a moderate head of live stock on each farm is an essential part and an important source of revenue, besides providing largely for the proper nutri-

tion of the people, helping materially to maintain the fertility of the soil and increasing its total return to the cultivator.[1] The multiplication of man necessitates not only more intensive cropping; but as he outreaches the means of his subsistence he has to augment his agricultural income by animal products and the fertility of his soil by farmyard manure. In a paper read before the Royal Institute of International Affairs, Keen has rightly pointed out that the development of Indian agriculture urgently requires 'the dove-tailing of the arable and animal husbandries into one mixed farming system.....It is evident that the cattle problem dominates the whole situation'. To make farming paying and agriculture yield enough for the nutrition of all in the country the emphasis of production will have to be shifted from the production of grains to the live-stock products. Under such a system, the various sections of the industry give support to each other, increase the out-put and net return per acre, and provide more employment and food on the farm. Mixed farming is *par excellence* the system of farming for a densely populated country like India. It can support more men per acre than pure grain-farming. The work on the farm is more evenly distributed over the year solving indirectly the problem of enforced agricultural idleness. More work results in an increased output per man, and hence a higher standard of living. The emphasis on live-stock products under mixed farming means the substitution of productive for unproductive work animals and the cultivation of sufficient fodder crops. With better feeding the improvement in yield is more than proportionate. The increasing returns from live-stock products make agriculture an economic pursuit. To sum up, we have reached a stage at which, animal husbandry cannot be paying unless it is dove-tailed with farming and the latter likewise fails to be economical without a suitable combination with the former. Dr. N. C. Wright expressing his opinion about mixed farming reports : 'In such a system the production of animal products such as milk is carried on side by side with a system of cropping in which leguminous fodder crops take an important place, and in which full use is also made of the increased quantities of cattle manure. In this way soil fertility is maintained, and the resulting increase in crop yields indirectly off-sets any increase in the cost of production of milk.'[2] In brief, the solution

1. Agriculture and Live-stock in India, Vol. IV Part IV.

2. *Opp. cit.* p. 60.

of the live-stock as well as that of the agricultural problem lies in mixed farming, in which both crop and animal husbandries play important parts at a much higher level of intensification than ruling at present in cultivation in the country.

Dairying:[1] The most economical combination of farming for large tracts in the country, which lend themselves easily to the cultivation of fodder crops throughout the year, would be with dairying. It has already been emphasized that the country is in great need of increasing its milk supply to balance the ordinary dietary. According to the cattle census of 1940, India has about 49 million three-years old cows and 21 million she-buffaloes, which are kept for breeding or production of milk. In addition there are 62 million goats of which nearly 10 millions are hand-milked. About 4 per cent of the cows and 6 per cent of the she-buffaloes are kept in the urban areas and thus dairying in India is mainly a rural cottage industry. At present, the average yield of milk is so low that the keeping of a cow implies more often than not a deficit economy. It has been estimated that 25 per cent of the cows yield less than half a pound of milk per day and only 6·8 per cent give 3 lbs, or more per day. The number of cows giving more than 4 lbs per day is insignificant. Nearly two-thirds of the cows yield between 1 to 2 lbs. of milk per day. The she-buffaloes have a higher efficiency. Only about 11 per cent yield less than 2 lbs, 42 per cent give 2 to 3 lbs. 22 per cent between 3 and 4 lbs. 9 per cent between 4 to 6 lbs. and 17 per cent between 6 to 7 lbs. per day. The average milking goat gives 162 lbs. of milk per annum and the kid consumes about 50 lbs. These average yields are very poor as compared with those obtained in foreign countries, so that, the country, in spite of having as many milch cattle as Europe including Russia, produces only a fifth of the quantity of milk, produced in Europe. The milk of Indian cows, however, has a higher butter fat content and is ordinarily 50 per cent richer than that of the European or American cows. The milk of Indian buffaloes contains almost double the amount of fat. That the present low yields are due to mismanagement of cattle is clear from the fact that the village cattle, when maintained under farm conditions, improve their yield in the following lactation by about 50 to 60 per cent in the case of cows and 20 to 25 per cent in the case of buffaloes. By better feeding

1. See Report on the Marketing of Milk in India and Burma.

and management alone of the existing cattle the production of milk in the country can be considerably increased within a short period. In the long period, by eliminating the economically unfit, it will be a modest estimate to hope for increasing the milk supply by at least 300 per cent.

The total annual gross production of milk in India has been estimated in 1940 at 7,447 lakh maunds,[1] while Oliver and Vaidyanathan assessed it at over 1000 million maunds and Dr. Wright gave a figure of 800 million maunds valued approximately at Rs. 300 crores. Allowing for a consumption of 1,154 lakh maunds of milk by the calves and kids directly from their dams, the marketing survey by the Central Agricultural Marketing Department puts the net supply of hand drawn milk in India at 6,293 lakh maunds valued at over Rs. 183 crores. Of the total production, 3 per cent is contributed by goats, 46 per cent by cows and 51 per cent by she-buffaloes.

The production of milk has lagged behind the increase in population in the country so that the *per capita* supply is less to-day than it was a generation back. The population in 1941 increased by 27 per cent in the last twenty years but the number of milch cattle during the same period increased by only 5·30 per cent and the production of milk by about 7·8 per cent. As a matter of fact the number of cows in 1940 was actually less than in 1930 by about a million. There is also reason to believe that the milking quality of Indian cattle, (which is already very bad) has been deteriorating during recent years, as is evident by the fact that, the increase in the production of milk since 1935 has been less than the increase in the number of milch cattle.

The obvious outcome is that many persons, including children have to go without milk. A village Enquiry regarding cattle and the Production and Consumption of milk in seven Breeding tracts of India in 1939 revealed that even in the dairying areas, 16 per cent of the families did not consume any milk or milk products at all. Conditions in other parts may be worse. In a dietary survey carried out in South Indian villages by Dr. Aykroyd and B. G. Krishnan, milk and milk products were found to be entirely absent from the diets of 31 out of 44 families investigated, while the average milk consumption of the remaining 13 families was

1. Report of the Marketing of Milk in India.

less than 3 oz.per day. For the country as a whole the average *per capita* consumption works out to 5·8 oz. of milk per day including the quantity consumed both as fluid and as products. It is the highest in Sind at 18 oz. and lowest in Assam at 1·3 oz. It is 15·2 oz. in the Punjab, about 7 oz in the United Provinces, N.W.F.P. and Central India, nearly 5½ oz. in Delhi and Bombay, 4 oz. or so in Madras, Bihar and Hyderabad and only 2·8 oz. in Bengal. If we turn this milk into standard quality milk, the Indian *per capita* consumption of milk may be taken at 9·2 oz per day.

But, in spite of the fact that over 95 per cent of the milch cattle are in rural areas, a survey of 23 important cities in the country shows that the urban intake is almost double that of the daily average consumption of milk and milk products in the country. In cities like Bombay, Cawnpore, Calcutta and Delhi the daily *per capita* consumption in 1935 was 15·6 oz, 15·8 oz, 9·8 oz and 22·7 oz. respectively. This higher cousumption of milk in the cities is due to the higher purchasing power. The amount of milk consumption depends very much on the amount of income. An inquiry in the city of Lahore covering 952 families in the city showed that whereas families with an income of Rs. 100 p.m. or over were regular consumers of milk, with a daily consumption per head rising from 13·6 oz. to more than 30 oz. according to income, only one-third of the families with less than Rs. 25 p.m. as income consumed milk regularly. The daily consumption per head in the case of these latter families was only 2·8 oz. Practically speaking even in the cities the lower income group families hardly take any milk or milk products. It is significant to note that the mill-workers at Bombay and Sholapur consume only 1·8 and 1·3 oz. of milk and milk products per head per day. It can be said with reference to this class of urban population that their consumption of milk and milk products is even lower than that in rural areas. The industrial labourers in the West consume many times more milk and milk products. The *per capita* daily consumption of dairy products by the working classes is more than 60 oz. in Belgium and Finland, nearly 40 oz. in U.S.A., more than 33 oz. in Germany and Norway, and 56·6 oz. in Sweden.

Taken on the whole, the *per capita* daily consumption of milk including products is very low in our country. It stands almost

no comparison with 56·8 oz. of Canada, 55·6 oz. of New Zealand, 49·2 oz. of Switzerland, 45·4 oz. of Finland, and 40·7 oz. of Great Britain. Again, in foreign countries 40 per cent of the milk is taken as fluid, whereas in India only about a quarter of production is taken that way. The foreigners derive a greater utility out of each ounce of milk that they consume than we do. Moreover, while the *per capita* supply in India is falling, the consumption of milk has increased considerably in Europe and America. In the United Kingdom, the consumption of milk had almost doubled itself during the previous 40 years by 1923. Almost similar progress is noticeable in several other countries. Taking the standard Indian requirement, from the point of view of a balanced diet, at 15 oz. per day per head (as against 35 oz. of the European standard) it is clear that the present supply falls short by at least half of the requirements. But this requirement has been estimated at a very low standard and as has been pointed out by Dr. N. C. Wright: 'If the standard were to be set at a level more nearly akin to that aimed at in progressive European countries, the present output of milk in India would not merely need to be doubled, but would have to be increased threefold or even fourfold.' We may fix the target of the minimum milk production and consumption in the country at least at three times the present output for the immediate future. We require more milk not only for the cities but equally for the villages; and a great expansion of the dairying industry is an urgent necessity to balance the diet as well as to reorganize agriculture in the country on a more economic footing.

Now, in the typical dairy countries of the West the average size of holding is comparatively larger, for instance in Denmark the average holding is just under 40 acres, while the average dairy farm in Great Britain and the U. S. A. is of 100 and 150 acres respectively. Even on a small scale holding it may be more paying to practice mixed farming than pure grain cultivation, but its full benefits can be derived only when the petty holdings are combined into economic units. Combination of holdings on a large scale and their proper organization into economic cultivation units will have to be effected to introduce proper dairying in the Indian farming system. Dairying in the villages as visualized here should not be developed with an eye on the market in the neighbouring city or town but should be organized primarily to meet the rural requirements. As such, it may not be necessary to develop a factory

system of dairying throughout the country. On the other hand, the dairies in the villages should adapt themselves to the special requirements in the rural areas i. e. the disposal of a major portion as fluid for drinking and curd, the production of *ghee* and *khoa* and the utilization of the by-product as *lassi* or *maththa*. Dr. Wright suggested in his report on the Development of Cattle and Dairy Industries of India that: first, attention should be concentrated on the production of indigenous milk products and not on products of Western origin: second, steps should be taken to ensure that an adequate supply of milk and/ or milk products is available for consumption by the rural population; third, any attempt to introduce improved methods should be effected by evolutionary rather revolutionary changes of technique; fourth, the combination of producers on a village industry basis should prove the most effective form of dairy organization in India; and fifth, any improvements in production should be supplemented by the provision of improved marketing facilities. These suggestions are certainly worth considering for the transitional stage and may by far be the most suitable ones. But, the final shape of things to come may have little room for small-scale or petty holding farming. An entire village may be combined into a single farm with a dairying section of considerable importance, catering on a large scale milk and its products to the villagers themselves. Such improved technique shall have also to be adopted as may be necessary on account of the scale of its organization. In certain cases, surplus may have to be exported to the towns and cities in the form of milk products.

Ghee is the most important milk product and 57 per cent of the total production of milk is converted into it and supplied mostly to the urban areas from the villages. The producers retain at present only about 17 per cent of milk, 9 per cent for drinking and 8 per cent in the form of milk products. The 83 per cent is put on the market mostly in the form of *ghee*. The demand for butter and cream at present is very low, and not more than 2·4 % of the total milk output is converted into these. *khoa* and curd account for 5 per cent each of the total milk production.

Regarding the supplies to the cities, (which are growing rapidly), the milk business at present is in the hands of petty producers, who purchase good quality cows and buffaloes from the villages, which are forced to give the largest amount of milk during their

lactation period with the aid of numerous malpractices with the result that they generally become sterile. Adulteration of whole milk with water and selling of skimmed milk as genuine milk are quite common in the milk trade in the cities. It even becomes unwholesome and at times even unsafe. 'Bacteriological examination of market milk at Bombay showed that it had more than 36,000,000 microbes per c. c.....Even the sewage effluent of London shows 11,000,000 mircrobes per c. c., which is less than a third of what the *bazar* milk in Bombay contains.....In other countries raw milk under 'certified' grade has less than 30,000 microbes per c. c. Milk with 20,000,000 microbes per c. c. is considered 'very bad' according to quality grade standards in European and American countries.[1] There is an urgent necessity of an effective legislation to deal with the problem. But the final solution lies in a reorganization of the milk supply in the cities.

It has been suggested[2] that to effect improvements in the milk supply in the cities, 'the first pressing necessity is to purge urban areas of their milch cattle and the second, to organise effectively the collection and distribution of rural supplies of milk.

'In view of the peculiar conditions prevailing in India, the distribution of milk in a city or town could be most effectively done if it were entrusted exclusively to one properly constituted milk marketing organization. In other words, the monopoly of milk distribution should be given to one body.....The actual retail distribution may, however, continue to be done by existing retailers, who shall be licensed and shall obtain supplies in wholesale from the above milk marketing organization only.' This shall require building and equipment, the cost of which is estimated at Rs. 3 per person for a city. The supplies will come from neighbouring villages or from distant places as required. There will be depots in the city for the processing of milk. Animals in the village will be milked under the supervision of the staff of the proposed monopolistic marketing organization. This scheme of the Agricultural Marketing Department is good for the present, but with reorganisation of agriculture in the post-war period certain changes may have to be incorporated in the scheme. As far as the first part is concerned obviously it will be a necessary measure under all conditions. But, for the supplies of milk, we visualize a ring of villages round each city with farms devoted to specialized types of farming. The

1. Report on the Marketing of Milk p. 252. (2) *Ibid* p. 281 *et seq.*

villages, bordering a city, should cease to produce grain. These will benefit by the production of milk, vegetables, fruits and flowers and supply the same to the city. To avoid competition among themselves, it would be better to organize the distribution of their products through the system of a central pool with various depots in the city. Such a scheme will fit remarkably with our plan of reorganising agriculture in the country on the basis of economic units of production and mixed or specialized farming.

Pig farming: Another suitable combination of farming can be with pigs, a combination accounting for the agricultural prosperity of the entire region from Holland to Denmark, where nearly every farm has a long row of pigsties behind the cowhouses. India has about 2·8 million pigs in all, the largest number being in Madras. The pigs are not usually kept by the farmers and the pig-fattening industry has not developed at all. There is however a considerable scope of its development even in areas, where irrigation facilities are not enough for all round supply of fodder, provided the present superstitions and sentiments against it can be won over.

Sheep-Breeding: There are some 47 million sheep in India. Madras has as many sheep as the rest of British India. Punjab, Bombay and the United Provinces are the other important sheep-breeding tracts. These are owned by nomadic herdsmen or by the landless labourers and seldom, if ever, by the farmers. The quality is poor and the country is becoming increasingly dependent for its wool on foreign supplies. It may therefore, serve a useful purpose if sheep-breeding is encouraged as auxiliary to agriculture in areas, which are not very suitable for a combination of dairy-farming.

Poultry-keeping: Poultry rearing has not yet been adopted by the farmer as ancillary to his main occupation. There were in British India in 1940 some 61 million poultry birds, more than 30 million being in Bengal alone. Madras has another 17 millions. The Royal Commission on Agriculture in India drew attention to the opportunities for the development of poultry industry in the country. Religious prejudices and the absence of a proper marketing organisation are the main limiting factors in this respect. But these are not insuperable and a development of the poultry industry will be of considerable benefit to agriculture as it has been in Europe since the Great War. There, poultry-keeping has now become a profit-making business and in certain countries it has now become one of

the greatest sources of agricultural income. It has received the greatest stimulus from the increased demand within a country. From that point of view conditions in India are now very favourable and the demand for eggs in particular, is steadily growing. This type of mixed farming is particularly suitable for the country under the present conditions for small holdings do not stand in its way; and the amount of capital required is small, the turn-over is fairly rapid, running expenses are not very high and the waste products from the farm and the home, useless for other purposes, can be utilized on the poultry farm. Moreover, its development will be an important factor in balancing the poor man's diet. The present consumption of meat, fish and eggs in the country is insignificant among the poorer classes. It needs to be increased unless the shortage is met by milk and its products.

In brief, mixed farming should be the objective of Indian agriculture, so that, it may become really economical and the farmers may be able to improve their standard of living. It will benefit the country at large for the increased prosperity of the farmer may give a jolt to the industrial development in the country, and the people will be able to have more nourishing food by drinking more milk and by taking more meat, eggs, or by having more of fruits and vegetables. Mixed farming may lead us to the road of an all round prosperity in a manner which no other system can.

CHAPTER IX

Marketing of Agricultural Produce.

Marketing of agricultural produce was of little importance under a system of subsistence farming with self-sufficing village units. The weekly and the bi-weekly markets were all that were needed to exchange the small surplus of agricultural produce in a village with the few necessities that it required from outside. The volume of such marketing was very very small and its organisation was simple for the market was seldom affected by external forces. Gradually, as the trade in agricultural products expanded, since the latter half of the nineteenth century, marketting or sale became an important adjunct of farming in the country. Its importance varied from place to place and everywhere barter gave way to a system price economy. The different types of markets, that sprang up linked the producer and the consumer through a chain of middlemen, which more often than not was too long. The grower seldom received a fair price for his produce and the inefficiency of marketing caused serious leakages. By the time the Royal Commission on Agriculture in India reported, the interests of the cultivator, which were left to the free play of economic forces had suffered a great deal in the process. The Commission therefore, made a number of suggestions for the proper organisation of agricultural marketing in the country. But it was the Great Depression, which brought the problem to the forefront for it was realized then, that marketing was the crux of the problem of the rural prosperity. Accordingly, steps were taken by the Government to give effect to the recommendations of the Royal Commission and in April 1934, Mr. A. M. Livingstone was appointed as the Agricultural Marketing Adviser.

Government Agricultural Marketing Organisation:—The Government of India Resolution No. F-16-M/34 of 10th January 1935 stated that although the Provincial Governments had accepted in general the recommendations of the Royal Commission on Agriculture regarding market surveys and the appointment of expert marketing officers in the Provincial Agricultural Departments and had in several instances taken such action in that direction as their finances permitted, Local Governments, (however) were in general deterred by financial stringency from making substantial progress. The Government of India, in view of the importance of improved agricultural marketing as an aid to the general economic recovery of the country,

came to the conclusion that a stage had been reached where action might usefully be taken to study in detail the all-India aspects of the problem and that substantial expenditure would be justifiable even at a time of financial stringency—if the position of Indian agricultural produce in world markets could be strengthened, and greater advantage taken of the huge internal market for such produce.

'Accordingly, Provincial Governments were consulted in July, 1933, and, on receipt of their replies, the Government of India placed the matter before the Advisory Board of the Imperial Council of Agricultural Research for an expression of opinion. In the light of the replies received from the Local Governments the Board unanimously recommended action on the following lines:—

(a) The first steps should be the appointment for a limited period of a highly qualified and experienced Marketing Expert with practical knowledge of the organisation of agricultural marketing in other countries of the Empire. This officer and the necessary assistants should be on the staff of the Imperial Council of Agricultural Research and should undertake the investigation of marketing problems and formulate schemes for the improvement thereof, make recommendation as regards standard grades for the various commodities and advise Local Governments and Provincial Departments of Agriculture generally in regard to agricultural marketing.

(b) Attention should be concentrated in the first instance on the principal commodities, and

(c) Local Governments should be invited to collaborate with the Marketing Expert, if appointed, by appointing Provincial Marketing Officers.

'The Government of India accepted the view of the Advisory Board and decided that a Marketing Expert should be appointed on the staff of the Imperial Council of Agricultural Research for a period of three years. With the sanction of the Governing Body of the Imperial Council of Agricultural Research, Mr. A. M. Livingstone, a senior official of the Marketing Branch of the English Ministry of Agriculture, was accordingly appointed as Marketing Expert on the staff of the Council and took up his duties on the 28th April, 1934.

'The question of agricultural marketing was also discussed at the Provincial Economic Conference held in April 1934 and there was general agreement at the Conference that, of all practicable measures for improving economic conditions, an intensive programme to develop marketing facilities for agricultural products (both crops and livestock products) offers the best immediate prospects of substantial results. The Conference was of opinion that action to be taken to deal with the main marketing problems should include propaganda and the supply of information in external markets regarding Indian products; the grading, sorting and bulking of the main staple products; special market organisation for perishable commodities; information to India's producers of consumers' requirements both in India and abroad; the planning of production on the basis of quality and demand; the establishment and development of regulated markets; the undertaking of market surveys for purpose of developing a common plan, throughout India and the establishment of properly organised 'futures' markets, commodity exchanges and ware-houses.

'.....The Government of India decided to proceed on the lines recommended at the Conference which included the following initial steps—

1. The appointment of a Central Marketing Officer and staff by the Government of India.

2. The appointment of Provincial Marketing Officers.

3. The inauguration of Marketing surveys.

4. The apppointment of special committees for staple crops.

5. Work on grade standards.

'These recommendations broadly follow the Recommendations of the Royal Commission on Agriculture which were endorsed in general by the Central Banking Enquiry Committee and steps will now be taken to give effect to them.

'The question of establishing additional crop committees is still under the consideration of Government. In the meantime it has been decided, however, that the other recommendations should

be given effect to immediately in accordance with a scheme of work prepared by the Marketing Expert Advisor on the staff of the Imperial Council of Agricultural Research. This work, which will be undertaken by a Central staff in conjunction with Provincial Marketing staffs, falls into three main divisions, viz:—

(i) Investigation work;

(ii) Development work; and

(iii) Work on grade standards.

'The work to be done under these various headings may be summarised as follows:—

A—Investigation work.

'This will include a series of marketing surveys with immediate reference to the more important commodities.....Certain general questions are also included within the scope of the surveys, viz, Regulated Markets, Marketing Organization, the problems of transportation, storage and preservation of the commodities dealt with standardisation of containers, etc.

'The marketing surveys when completed will set out in detail the present system of marketing of the commodities concerned, not only in each of the provinces separately but in respect of inter-provincial, inter-state and foreign trade so as to provide an all-India picture of existing conditions and a common basis for future progress. The report on each survey will set out in precise technical detail, definite suggestions for standard grades, containers, handling, methods of packing, contract conditions, etc. Without committing either the Central Government or Provincial Governments, these reports will also formulate proposals regarding any improvements in marketing organisations in the various areas which may appear to be necessary and practicable.....

B. Development work.

'For each commodity the programme of development work must obviously depend on the results of the marketing surveys but will usually include the demonstration of any recommendations made as a result of the surveys with the object of informing both producers

and traders of consumers' requirements and the popularisation of the recommended standard grades, containers, etc. In some instances some small packing stations may be organised (e. g. for eggs and fruits) to demonstrate the practicability of bulk sorting, grading and packing and the commercial advantages of employing the new standards.

'More generally, development work will aim at securing the more extensive use of agreed commodity standards, the elimination of waste and the better organisation of producers for marketing purposes. This work will be done in the provinces and will probably fall mainly on the Provincial Marketing Staffs.

C. Grade Standards.

'This will be work of a technical character relating to the chemical and physical characteristics of such products as oil-seeds, grains, fruits, etc., and the testing of grading technique and equipment under practical conditions.'[1]

It was with these resolves and objects that the office of Agricultural Marketing Adviser to the Government of India was established with effect from 1st Jannary 1935. It has continued since then and has recently been re-designated as the Central Agricultural Marketing Department. The staff now consists of the Agricultural Marketing Adviser, a Deputy Agricultural Marketing Adviser, three Senior Marketing Officers, three Marketing officers, one Supervising officer (Grading stations) and fifteen Assistant Marketing Officers. The Provincial Governments and certain leading Indian States have established similar organisations in their respective areas. Before reviewing the work of the Marketing Department, let us bring the record up to date by indicating very briefly the machinery set up by the Government to cope with the situation caused by the present war.

Procurement Arrangements:—During the war time the Govèrnment has been faced with the problem of procurement of food supplies. The Provincial Governments were obliged to set up procurement agencies, which have further modified the free play of economic forces in the marketing of agricultural produce. The

1. Proceedings of the first Meeting of the Crops and Soils Wing of the Board of Agriculture and Animal Husbandry in India, P. 199.

provincial procurement arrangements are not uniform but nowhere has there been a general requisitioning or the wholesale creation of Provincial or State monopolies. Madras was the first province to set up a definitely official purchasing agency on 1st September 1942, consisting of five Grain Purchase Officers and Marketing Assistant and Recorder with other necessary staff. The Grain Purchase Officers purchase both for export from the province and to supply the deficit districts of the Province, Defence Services, Industries etc., and their operations are designed to reduce competition for the purchase of rice and paddy to the minimum. In the United Provinces the agency consists of five Regional Food Controllers, with Deputy Controllers, Transport Officers, and a large marketing staff; who conduct purchases in their regions through the agency of Purchasing Agents. In each main assembling market Purchasing Agents have been appointed and the purchases are made both for the Defence Services, for export under the Basic plan, and for internal requirements. The Government has also undertaken to supply the requirements of other large competitive buyers. Competition by merchants has been reduced to the minimum and the Food Controllers impose strict control over movements from one region to another. On the other hand, in Sind a syndicate for wheat was formed of the four Karachi Flour mills. Another syndicate consisting of 50 merchants has been formed for the purchase of all other food grains. The Sind System, is calculated to eliminate competition to the greatest possible extent. The Assam Government appointed Messrs. Steel Bros. in September 1942 as their sole agents for the purchase of rice and paddy. The procurement agencies are likewise different in the other parts of the country. On the whole, the purchases are made either at a statutory maximum price or at the ceiling prices which a Government instructs its agents or officers to observe. Sometimes purchases are also made at the market rates. The extent of interference with trade is not uniform in all the provinces. In Assam and Madras for example the trade at a certain stage and to a limited extent is excluded altogether. Interference is not so great in other provinces. Regarding the procurement arrangements the Foodgrains Policy Committee 1943 observed that the general objective must be to eliminate competitive buying to the greatest practicable extent. The Committee recommended occasional requisitioning from the trade in connection with price control or anti-hoarding drives and suggested even regular requisitioning in seri-

ously deficit areas. It is deplorable that full use has not been made of the present opportunity to develop co-operative marketing in the country. It would have been better had the Government tried to organise producers' co-operatives for the supply of foodgrains to the Government directly. At the same time, the present opportunity can be well utilized for giving a fillip to the consumers' co-operative movement in the urban areas by giving special facilities of procurement and purchase to the newly organised societies.

Coming now to the main topic let us first review the present condition of agricultural marketing in the country as revealed by the marketing surveys of the important agricultural commodities. The Central Agricultural Marketing Department has already published a number of all-India marketing survey reports including those of wheat, linseed, eggs, tobacco, coffee, potatoes, grapes, milk, groundnuts, rice, hides, sugar and co-operative marketing. Survey work is still in progress in respect of a number of commodities and many more fresh surveys are being undertaken. It is on the basis of some of these reports that we shall draw our picture of agricultural marketing at present in the country.

1. *Marketing of Wheat*[1] Wheat is an important cash crop valued at Rs. 64¼ crores in the year 1934-35 at Rs. 2/8/-per maund. The valuation for the year 1943-44 at an average price of Rs. 10 per maund would not be less than Rs. 250 crores. Almost half the produce is retained by the cultivators and the supplies in the market are concentrated to a couple of months during the harvest, when between 50 to 60 per cent of the total market supply in the year is cleared off by the growers. This creates a glut in the market, giving rise to a serious depression in prices at harvest time, and raises problems connected with storage, transport and communications. To be exact, the net supply of wheat and wheat products available for consumption in India, apart from seed is from 8 million to 8½ million tons. of which about 5 million tons are placed on the market, the rest being retained by the cultivators and in the villages in the producing areas. The *per capita* consumption of wheat varies from 4 lb. per year in Assam and Madras to 350 lbs. or more in some of the cities in Northern India.

1. For detailed account see the Report on the Marketing of wheat in India.

There is such a heterogeneity of weights and measures that quotations of prices in different markets are hardly comparable. The grower also stands to loose as the buying *seer* of the merchant may be heavier than the selling *seer*. Obviously, something must be done to standardise weights and measures and to put price quotations in all markets on a comparable basis. As for the quality is concerned, white wheats command a premium of about -/2/-per md. over red wheats, while soft wheat is generally at a discount of abont 5 per cent as compared with hard wheat (*sharbati*) The premium is highest on the *durums*. The prices in the different markets naturally differ accordtng to their difference from the producing centres; but the variations in the different organised trade centres are very much in sympathy with each other. But in centres, where there are no organized trade associations, the price movements are highly irregular and disconnected adding to the risks and consequently to the costs of marketing. But the greatest leakage in the grower's income occurs on account of the seasonal depression in prices at the harvest time which, on an average, amounts to about 19 per cent of the off-season price level. Rent and revenue collections as well as the monsoons after a couple of months of the harvest oblige the cultivator to take his wheat just after its harvesting. The Marketing Survey suggests 'The solution is rather to be found in the provision of adequate and suitable storage accommodation and adequate 'hedging' facilities at the key positions occupied by the more important assembling markets.'[1] It may be added that warehousing facilities within the producing areas and the development of a sound system of credit on the basis of warehouse receipts will facilitate not only the development of a bill market in the country but may be of great help in solving the problem of the seasonal glut and depression in prices at the harvest time in the wheat trade. The grower at present has very little knowledge of the course of prices, depending very largely for his information on hearsay and on reports received from the local *baniya*. A better system of the dissemination of the market information is needed. Arrangements have now been made for broadcasting market prices but it is a minor fraction of the growers that has access to a radio set.

The present methods of preparing the wheat for the market i. e. harvesting, threshing, trading and winnowing are not very efficient and economical, but can generally make the wheat sufficiently clean

1. *Opp. Cit.* p. 116.

to meet the terms and conditions of the contracts prevailing in the different wholesale markets. As a matter of fact the amount of dirt and other impurities in the grain are not infrequently due to the high percentage allowed in the contracts of different trade associations; and hence, there is greater need of modifying and improving the terms of these contracts than the methods of preparation by the cultivatators.

The growers have usually small quantities to sell and so the assembling of produce from the fields constitutes one of the main marketing services. It is done by a number of agencies. Growers like to market their crops directly but indebtedness, need for ready cash, pressing agricultural operations, complicated marketing practices, lack of transportation facilities and the holding of quantities too small to justify carrying them to the market cause them in many cases to sell their wheat in the village. In the Punjab, where means of communication and transport are well developed and the marketable surpluses are considerable the cultivators bring four-fifths of the crop in the assembling markets. In the west of the United Provinces, they bring about one-third but much less in the east. The rest of the wheat in the markets throughout the country is brought by various types of middlemen, who purchase it from the growers in the village. These include the cultivators, who collect the produce of other growers, the landlords, who collect the produce of their tenants, the village *baniyas* and the itinerant dealers and petty merchants who move from village to village. Most of the wheat which finds its way into the hands of the village *baniya* is in repayment of loans and at pre-determined prices, which eventually turn to be lower than even the prevailing prices at the harvest time. He handles from one-fifth to two-fifths of the total wheat crop in the country. The itinerant dealers include the *ghumars* and *telis* making their purchases through the village weighmen, who charge 3 pies per maund from buyer as well as seller. Between the primary producer or seller and buyer in the large wholesale markets are the *kachcha arhatiyas* or small commission agents and they sometimes buy on their own account as well. Sometimes, the co-operative commission shops or sale societies, particularly in the Punjab replace the *kachcha arhatiyas*. Finally come the *pacca arhatiyas*, who form the main channels of distribution, are the chief holders of stocks, and operate as large wholesalers on their own account.

From the point of view of the primary producers and sellers the markets afford little convenience and facilities for the speedy determination of prices or for the easy and economical handling of the goods. The markets of the Punjab Canal Colonies, a few markets in the west of the United Provinces and some in the Central Provinces and Berar are distinctly of an improved type. In certain markets in Northern India standardisation of market charges and practices by local trade associations and merchants' committees has been carried out, while statutory regulation of markets is now being made under the various provincial laws. The need for regulated markets cannot be over-emphasised.

In the wholesale markets to which the cultivators bring their produce the sellers meet, besides the middlemen already enumerated, a number of market functionaries, all of whom are entitled to a remuneration. The important among these are the *dalal*, the *tola* and the *palledars*. The rates in the assembling markets are determined either (a) under cover, (b) by auction, or (c) by private treaty. The first system is generally more common than the other two and in it the scope for malpractices appears to be considerable usually to the disadvantage of the cultivator-seller. Likewise, auctioning a number of heaps together (known as dara sales), each possibly belonging to a different party, definitely lends itself to dishonest practices, and apart from this the better qualities do not receive their full premium. A number of deductions are also made of which some are fixed and others are variable, Deduction for *karda*, *dhalta* or *dane* are according to the usage in a market while variable deductions are made for refraction and general appearance after the settlement of prices. Besides, there are many malpractices such as taking delivery next day when prices may be re-settled if the prices in the meanwhile have fallen, false weighment, arbitrary deductions for the assumed excessive refraction; and even re-weighing by the buyer at his own godown after the seller has given delivery at the *kachcha arhatiya's* shop. The seller has also to meet a number of merchandising charges many of which are taken in kind without any actual weighment. These include *arhat*, *dalali*, *karda*, *palledari tulai*, *dharmada*, and many other miscellaneous charges such as *shagirdi*, *chaudhari*, *batta*, *muddat*, payment to waterman, *chaukidar*, cook and sweeper. War-fund has also been added in certain markets recently. The table given below gives the average

merchandising charges in some of the important wholesale assembling markets in the country:—

Merchandising charges on wheat per 100 rupees.

Item	Punjab		United Provinces		
	Colony	Non-Colony	Hapur	Ghaziabad	Bareilly
Payable by seller	Rs. as. ps.	Rs. as. ps.	Rs. as. ps.	Rs. as. ps.	Rs. as. ps.
Handling	0 11 8	0 7 9	0 10 6	0 6 3	0 11 0
Karda, Dhalta & Dane	0 0 9	0 6 6	....	....	0 10 0
Commission	0 15 2	0 0 0	0 7 6	....	1 0 0
Brokerage	0 1 2	0 1 7	....	0 2 6	0 2 0
Charity	0 1 0	0 0 9	0 1 0	0 1 0	0 1 9
Miscellaneous	0 3 0	0 6 8	0 2 6	0 2 6	0 3 9
Total	2 0 9	1 7 3	1 5 6	0 12 3	2 12 6
Payable by Buyer					
Handling	0 9 0	0 10 7	0 7 6	0 12 6	0 7 6
Commission etc.	0 4 10	1 0 0	0 10 0	1 6 6	1 0 0
Total	0 13 10	1 10 7	1 1 10	2 3 0	1 7 6
Total Market charges	2 14 7	3 1 7	2 7 0	2 15 3	4 4 0
Octroi, toll etc.	0 0 6	0 9 7	....	0 10 0	3 9 0
Grand total	2 15 1	3 11 5	2 7 0	3 9 3	7 13 0

The market charges tend to be lower in the regulated markets and they tend to be enhanced in individual cases in markets, where they are not clearly defined and specified. There should therefore, be some market authority to draw up and fix these charges. This may be done either by Trade Associations or by instituting regulated markets. The octroi duty, terminal taxes and tolls have a serious hampering effect on marketing and the burden is usually borne by the cultivator and it is more than equitable.

Hardly any grading is done for the sale of wheat and even the best produce may sell at the ordinary market rate. Grading cannot be a paying proposition unless certain definite grades are recognized

in the market as better than others. To put a premium on quality, grades need to be defined and standardised in such a way as to be made the basis of the majority of transactions.

There is a great variation in the terms of the contracts in the different trade centres, which makes it difficult for traders in one market to deal in another. The amount of refraction allowed in certain cases is high and coupled with the universal practice of deducting a customary refraction while purchasing from the cultivators results in adulteration. Contracts should therefore be standardised on a uniform basis in respect of dirt, barley, damaged, shrivelled, weevilled and red wheat. Customary deductions such as *'karda'* should be abolished and the price should be determined in relation to the standard quality. The adoption of such standard contract and dealings in terms of them will lead to a more uniform level of prices throughout the markets of the country.

Sufficient losses are also incurred due to defective storage, and on the most conservative estimate these amounted to about 3 lakh tons a year valued at over 2·4 crores of rupees at the slump level of prices. By improved storage and by improved organisation for hedging stored grain on the 'futures' markets, storage costs can be reduced to a great extent and the present net margin of nearly 8 per cent gain could apparently be almost doubled.

The pivot of the whole system of distribution is the *pakka arhatiya* and the cost of wholesale distribution varies from place to place and from one merchant to another and ultimately all the burden falls on the cultivators. The Marketing Survey pointed out : 'At present the cultivator in some cases gets only about Re. -/9/3 out of each rupee paid by the consumer'. Conditions cannot be improved unless the chain of middlemen both in the assembling and distributing markets is shortened and a distinction is made between legitimate and illegitimate deductions and charges. Co-operative marketing may link the producers directly with the consumers to the mutual advantage of both.

We may deal more briefly now with the marketing of other crops as many of the characteristics and defects are similar to that found in the case of the marketing of wheat.

Marketing of Rice: Rice is by far the largest single crop grown in the country having an average production of about 28

million tons, of which roughly 60 per cent is retained in villages. The principal season of marketing follows closely upon the harvest of the crop—the arrivals of paddy being much heavier than those of rice during this period. There is therefore, a marked depression in paddy prices at the harvest time. There is considerable scope for earning extra profit by storing fine rices for maturity and it would be useful to store paddy rather than rice on account of the comparatively lower costs of storage and reduced losses in carrying stock of the former. The best type of storage for bulk would be the ferro-concrete underground bin. Much of the rice is broken while being prepared for the market and there is need for the improvement of the harvesting technique. The cheap mechanical rotary threshers of the type used in Japan may be adopted with considerable advantage. Similarly, there is room for improving and standardising the parboiling process.

Another fundamental necessity is with regard to the speedy dissemination of reliable market news and regulation of markets. The average market charges per 100 rupees of rice vary from Rs. 1/9/7 in Orissa to Rs. 13/14/4 in the United Provinces. In addition, there are unfair deductions and losses caused by malpractices. There are no standard scales of allowances or deductions for the various impurities or defects and the rice varieties and trade descriptions are almost innumerable. There are no fixed standards of quality. Adulteration and admixture are so common that the position in regard to quality in the rice trade is chaotic. There is need for standardised classification and grading of rice. Grading of rice under the Agricultural Produce (Grading and Marketing) Act, 1937, has been beneficial to the producer as well as the consumer and the trade. While there is great scope for improving varieties, it is desirable that there should be a greater uniformity in the types of rice, grown in each tract. Weights and measures are equally heterogeneous and varied in numbers, which give rise to increased profit margins of the middleman which ultimately reduce the cultivator's price. Standards of Weight Act enacted in March 1939 is aimed at removing this major defect.

On account of the inefficiency of marketing and the long chain of middlemen, together with the disproportionate merchandising charges and the depression in harvest prices, the rice grower receives about eight annas and three pies for each rupee paid by the final

consumer of rice. The Marketing Survey revealed that in the pre-war year, 'on account of having to pay high interest charges, and to dispose of the bulk of his marketable surplus in the village to the various assembling middlemen, and having a negligible share in the processing of paddy (by milling) and marketing of the finished product (rice), the cultivator is losing about seventeen crores of rupees annually at a conservative estimate.'[1] The cultivators will benefit much by co-operative processing and marketing of their produce and by selling rice instead of paddy as they do at present. A self-contained type of milling plant may be worked by such co-operatives in the main assembling centres.

Marketing of Sugar:—Sugarcane is primarily a cash crop, 60 per cent of which is sold in the market after being converted into *gur*. On an average about 16·2 per cent of the crop is utilized for non-industrial uses, 61·1 per cent for preparing *gur*, 4·5 per cent for *khand* and 17·4 per cent for factory sugar. *Gur* is ordinarily prepared in the open pan furnaces after being crushed in mills, which give a low extraction of juice. It is estimated that about 10 per cent of the juice is lost in the process causing an annual loss of Rs. 2·5 crores nearly. The furnaces have no arrangement for controlling heat or flue, which effects adversely both the quantity and quality of the product prepared. The recovery of *gur* averages about 10 per cent and the costs of preparing it vary from 10 annas to Rs. 1/2/- per maund. The costs in the case of power crushers work out at 8 to 9 annas per maund. *Khand* is prepared by separating molasses from *rab* by the *khanchi* process and of late by centrifuging in some cases, which process is more economical and gives a higher recovery. The manufacture of white sugar is carried on in some 155 vacuum pan factories of which 140 work on sulphitation process and the rest on carbonation, which is a more efficient process.

Of the total production of cane *gur*, 48 per cent is contributed by the United Provinces, 14 per cent by Bengal, 9 per cent by the Punjab, 7 per cent by Madras, 5 per cent by Bombay and 4 per cent by Bihar. White sugar is made directly from cane in the factories ; and, on an average, 57 per cent is contributed by the United Provinces, 27 per cent by Bihar, 5 per cent by the mills in Bengal and the Punjab, and the balance by the rest of the

1. Report (Abridged Edition) p. 78.

country. India until recently could export sugar only to Burma. The consumption of *gur* and sugar within the country is very low and can substantially be increased by improving the quality and variety of products prepared.

To ensure fair prices, the minimum prices for cane purchased by vaccum pan sugar factories in the United Provinces, Bihar, Mysore and the Hospet Taluk of Madras are fixed by the respective local governments. These prices in the United Provinces are linked with the prices of sugar on a sliding scale. The prices of juice and *rab* depend on the prices of *khand* and *gur*. But *khundsaris* purchase both juice and *rab* generally much in advance of the season at a relatively low price by advancing loans on the hypothecation of crops. The prices of *gur* depend upon annual supply and have varied from Rs. 2 in 1936-37 to Rs. 7 in 1938-39. There are wide variations in the season and off-season prices e.g. in 1937-38, the harvest prices (December to March) averaged Rs. 2/5/- per md. but the off-season prices were as high as Rs. 5. Sometimes the off-season prices are lower than the harvest prices. These irregular tendencies are partly due to the absence of reliable information on production. The prices of sugar manufactured in the United Provinces and Bihar were controlled by the Indian Sugar Syndicate by fixing sale quotas and minimum prices for each factory. Much of the control is now exercised by the Sugar Controller.

Forty to seventy per cent of the total cane crushed in the different tracts by the factories is purchased at the gate generally from cultivators or their co-operative societies. Purchase in reserved areas are allowed only from growers or from co-operatives under the Sugar Factories Control Acts in the U.P. and Bihar. Purchases through agents are allowed only in the 'assigned' and 'free' areas. In the U.P. in 1939-40 about 65 per cent of the cane was supplied through the co-operative societies. Of the total production of *gur* about 13 per cent is retained by the growers for their own requirements. Of the balance, about 60 per cent is assembled in the wholesale markets, roughly 33 per cent being brought by the producers and 27 per cent by the village traders and money-lenders. 40 per cent of the marketable surplus is disposed of for local consumption, 15 per cent by producers and 25 per cent by village merchants. By selling through village traders a grower loses about 3 per cent of the price. The produce in the assembling markets is sold through

the *kachcha arhatiyas* and a few co-operative societies also function as such. The principal buyer is the wholesale merchant.

Merchandising charges payable by the sellers in the assembling markets vary at an average from Rs. 1-10-0 to Rs. 9-12-0 per Rs. 100 worth of *gur*. The total costs of distribution between certain typical markets range from Rs. 1/4/- to Rs. 2/13/- per maund representing 26.9 per cent to 43·8 per cent of the consumer's price respectively. The average costs work out at 34.8 per cent, 11 per cent being spent on freight, 3 per cent on municipal tolls and taxes and more than 20 per cent consists of merchandising costs and profits. The costs of distributing sugar (excluding freights) generally range from Rs. 1/8/- to Rs. 2/8/- per cent on value. These include Re. 1 to Re. 1/8/- for commission paid to agents.

There are no well defined grades in the *gur* trade although as an exprimental measure a scheme for grading has been introduced on the basis of specifications prepared by the Central Marketing Staff. The adoption of standard grades would secure better prices for the growers of better quality. The sugar factories too, sell their produce on the basis of their own brands or on samples and the Indian Sugar Standards of the Bureau of Sugar Standards are not yet popular. There is also the need for the standardisation of basis of price quotations and nomenclatures used. Quotations should be on a uniform basis and should refer to commonly recognised grades and units of standard weight and measures. For disseminating market information as a whole, there is a great scope for improvement and the step of the Gur Development Department in the United Provinces to broadcast daily prices and issue a weekly bulletin has been in the right direction.

For transport, bullock carts are still the chief means in rural areas leaving a great room for the use of mechanical vehicles and improved carts for the transport of both cane and *gur*. On certain railways the freight rates for *gur* are even higher than those for sugar and the position requires immediate examination. Railways should adjust their rate-system to the requirements of the trade.

The present methods of storage of *gur* are very defective and the commodity loses much both in quantity and quality in the process. The loss is between 2 to 10 per cent of the value of the produce while the costs of storage for an average period of six months range between 5½ and 9½ annas per maund. The costs of

storing sugar are estimated between 6 to 8 annas. The matter of storage of *gur* requires special investigation and should no longer be postponed.

Marketing of Linseed. Linseed is an important cash crop, of which only about 20 per cent is retained in the villages and the exports are of greater importance than the internal market. Almost half the crop is sold in the harvest months—March to May. The selling price of linseed in the outside markets depends on the price of Argentina linseed although due to better quality the Indian linseed commands a premium. At present the grower gets about 10 annas in the rupee of the price paid by the exporters and the large millers at the ports and a little more than half the price paid by buyers in the United Kingdom. There is thus a serious leakage, in no less a way, due to the disproportionate market charges. A more systematic control of market charges through the establishment of regulated markets by provincial legislation is required. Such legislation should make provision for the defining of market areas, the licensing of market functionaries, registration of charges and fixation of the amount to be charged and establishment of a sound system of control. There is need for more direct settlement of prices between the buyers and sellers rather than under the *pardah* as at present, as well as of a better system of dissemination of market information. Due to the heavy supplies in the market the harvest prices are depressed even to the extent of 25 per cent. Co-operatives can help a great deal in this respect by enabling the cultivators to hold back their produce and by processing it into oil. There is considerable scope for the introduction of economies in distribution by standardisation of contract terms within the trade and the introduction of mutual instead of non-mutual terms. There is also need of better services to be provided by the railway companies.

To ensure higher prices for better quality the Marketing Survey suggests that the trade should draw a clear distinction between the bold and the small type. The Central Marketing Staff has succeeded in securing an agreement between the trade organisations for a standard all-India contract for linseed, which not only clearly defines the different types but includes a scale of premia and discounts.

There is considerable room for the expansion of the internal market and no efforts should be spared to develop it. It depends

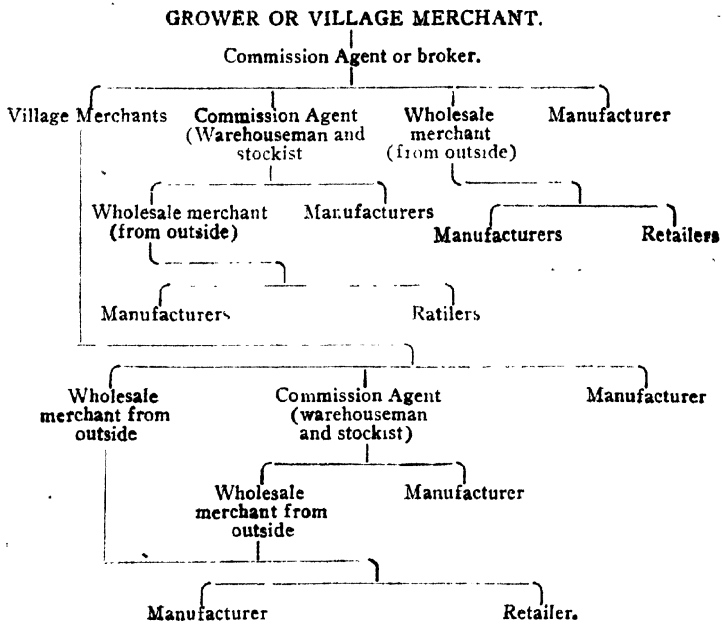
on the development of the local crushing industry. At the same time it is no longer economical to export linseed abroad; instead, we should try to develop an external market for linseed oil. Likewise, the present export of linseed cakes is most uneconomical. With the development of dairying and animal husbandry industry in the country we may require not only the present out-put of linseed cakes but considerably more amounts.

Marketing of Tobacco: On an average the growers sell 92½ per cent of their tobacco crop, the annual value of which has been estimated in 1936-37 at about 18 crores of rupees. The country produces about one-fourth of the tobacco in the world and yet imports considerable quantities, particularly of unmanufactured tobacco from the U. S. A. Over a thousand million pounds of tobacco are consumed in India every year and the annual consumption per head averages 2·9 lbs. per annum. Unlike other agricultural commodities, the demand for tobacco immediately after the harvest is great as manufacturers and processors prefer to get their supplies at this time, so that, prices at harvest are generally higher than prices in the off-season.

Prices of different kinds of tobacco leaf very from about 0-12-0 per maund. to Rs. 80 per maund according to quality. The variations are so great that the price of the same variety of tobacco grown in the same district may vary from field to field in the same season. It appears that there is room for the production of high quality flue-cured virginia tobacco. To enable the cultivators to get fair prices there is much need for an improved market news service. At the same time, the establishment of a larger number of markets in the producing centres is required, where growers may bring their produce. These markets should be regulated.

Practically there are no regular markets for tobacco in the producing areas and not more than 10 per cent of the produce is sold by growers in properly established markets. The crop is sold mainly in the villages either standing in the field or after curing. In consequence, the assembling of tobacco is in the hands of the middlemen, who take the produce to the secondary markets. In the absence of any central place, or *mandi* for tobacco except in Nipani, where the municipality has provided one common weekly market for the sale of tobacco, the warehouses of the *dalals* or *arhatiyas* serve the purpose of a market. How the absence of a

market has lengthened the chain of middlemen to the detriment of the grower may be judged from the following chart, which shows the agencies engaged in the assembling and distribution of farm-cured tobacco;—



An obvious result is that the market charges are disproportionately high. To illustrate, in the Charotar area of the Bombay Presidency, a grower has to pay 15 to 20 per cent of the sale proceeds as market charges, of which more than half are due to allowances and deductions in weight. The need for regulated markets for tobacco cannot be over-emphasised.

Again, growers have generally to wait for the receipt of the price for about a month. To improve the finance of marketing, the Marketing Survey suggests: 'Two things are, therefore, essential, the systematic grading and standardisation of tobacco and the question of prices on the basis of those grades so that banks and others might know the value of the produce against which they would be expected to make advances, and the other is the provision of dry, rain-proof storage where temperature, humidity and insect damage can be controlled.'[1]

1. Report p. 229.

In the tobacco trade the quality determines prices. In order to enable the cultivators to get full premium for their better quality the introduction of standard grades is essential, At present, under the Agricultural Produce (Grading and Marking) Act 1937 grades have been defined only for cigarette leaf (on the basis of colour, texture and freedom from blemish), and for sun-cured Virginia and sun-cured *Natu* tobacco. Similar action is desirable with regard to the other classes of Indian tobacco. The method of storing has a very profound influence on the final quality of the product. The present methods of storage are very defective and the cultivators have very inadequate facilities for the same. Damage by beetles and moths alone causes a loss of about one million rupees per annum. Recently a few cold stores for tobacco have been built with a distinct advantage. There is still considerable room for the extension of such facilities.

Regarding the returns, it may be said that about four-fifths of the tobacco crop is sold by the producers in their own villages to merchants, manufacturers and warehouse-men. The producers in such cases receive from 85·5 per cent to 99 per cent of the buyer's price, which of course, is not equivalent to the consumer's price. It has been estimated that, on an average, the producer's share of the price paid for unmanufactured tobacco by the consumer or manufacturer is not much more than 60 per cent or 10 annas in the rupee. In the case of the exported Virginia flue-cured tobacco the producers in Guntur get not more than 42·3 per cent of the price paid by the buyer in the United Kingdom. With regard to the exported country tobacco the producer gets only about 31·4 per cent of the price realised in England and 37·8 per cent of the price realized in Japan. Better market intelligence service and fixation of grades may improve the situation. There is leakage on account of the numerous and often incomprehensible systems of weights, which call forth for the adoption of standard weights. Co-operative marketing together with co-operative storage and processing may increase the growers' returns to a considerable extent.

Marketing of Potatoes:[1] Potato is mainly a cash crop with an annual production of about 500 lakhs maunds. In addition, about 11 lakh maunds are imported mainly from Burma costing the country about Rs. 33 lakhs per year. Price variations are great rang-

1. See Report on the Marketing of Potatoes in India and Burma 1941.

ing from Rs. 1-4 in the months of March and April to Rs. 3 and Rs. 5-8-0 per maund between July and November. These levels refer to the pre-war prices. Absence of suitable storage facilities is the main factor accounting for these wide variations. The commodity being highly perishable, high losses occur under the ordinary methods of storage. It has been estimated that more than 8½ million maunds of potatoes are lost in the process due to unsuitable storing and transport facilities. The trade requires many times more cold storage depots to check this annual loss of over one and a half crores of rupees calculated at the pre-war level. At present the growers get only about 50 per cent of the price paid by the consumers due to the excessive costs of distribution.

The Marketing Survey points out to the need of growing more potatoes. There is considerable scope for improving varieties and in particular, for replacing the Italian ones. The import figures for farina indicate the possibilities of starting a farina industry in this country together with the manufacture of other products, e.g. alcohol, dextrin, glucose, etc.

The need for grading according to definite qualities, sizes, shapes, colour, etc. is very great. Likewise there is the necessity for the standardisation of packages and for the fixation of market charges. The present transport facilities are also very unsuitable. The transport of loose potatoes in carts or steel wagons causes much loss. The latter should be replaced by wooden vans and the railway freight need to be reduced considerably.

The costs of distribution can be reduced by eliminating intermediaries as far as possible. The objective should be the establishment of direct contact between producers and consumers. The co-operative sale societies can serve the purpose with considerable advantage. Potato growers' co-operative societies, if organised, may be look after the financial and other requirements of the members.

Improvements in Agricultural Morketing:—In the light of the defects revealed in the various marketing surveys the government has taken a number of steps to improve conditions of agricultural marketing in the country. The main solution, it has been suggested, lies in co-operative marketing, a subject which we purpose to deal in another chapter. In the meanwhile, let us review the progress in other directions.

Legislation for regulating Markets:—The first piece of legislation in this respect was the Berar Cotton and Grain Markets Law of 1897. The Bombay Cotton Markets Act of 1927, although based on the former was a distinct improvement. It made provision for the establishment of regulated markets for cotton, controlled by a market committee, on which the cotton growers were represented. It was of an enabling character and permitted the notification of open cotton markets where unbaled cotton brought by the growers was to be marketed under proper rules and by-laws. The Bombay Agricultural Produce Markets Act of 1939 is more comprehensive and repeals the Cotton Markets Act. Legislation on similar lines was undertaken in other provinces and States as well. Hyderabad had enacted Agricultural Markets Act in 1930. Madras passed the Commercial Crops Markets Act in 1933, and C. P. put the Agricultural Produce Market Act on the Statute Book in 1935. Punjab, Mysore and the North-West Frontier Provinces and Sind adopted similar legislation for the regulation of markets on the basis of a draft model Bill circulated by the Agricultural Marketing Adviser in 1938. These Acts make provision for the establishment of regulated markets under the control of a Marketing Committee which makes rules and by-laws for the fixing of market charges and licensing brokers and weighmen. These obtain a square deal for the growers by improving in general the efficiency of the markets. But many provinces have lagged behind and the Markets Acts have not yet become sufficiently comprehensive. Legislation should be extended to establish regulated markets compulsorily in all the important assembling areas.

Standardisation of Weights and Measures :—The absence of uniformity in weights and measures has been an important factor in the exploitation of the growers and a serious impediment in the development of the proper marketing facilities in the country. The Central Provinces adopted legislation for the fixation of weights and measures in 1928 and the province of Bombay followed in 1935. These solitary attempts were supplemented by the passage on 28th March 1939 of the Standards of Weights Act, 1939, by the Central Government. It is an All-India legislation and came into force with effect from 1st July 1942. The Standards of Weights Rules, prepared in 1942, will now be enforced throughout the country and sets of standard weights will be supplied to the Provincial and State Governments.

Grading and Marking:—Without proper grading, growers are not assured a premium for their better quality. To enable trade to adopt statutory standards the Agricultural Produce (Grading and Marking) Act, 1937, was passed in February 1937. It defines standards of quality and methods of marking in respect of prescribed grade designations applied to scheduled products, which now include fruits, vegetables, eggs, dairy produce, tobacco, coffee, hides and skins, fruit products, *ata*, oil-seeds, vegetable oils, cotton, rice, lac, wheat, *sann*, hemp, sugarcane, *gur*, myrobolans and *bura*. The graded commodities are marked with AGMARK. Grading and marking is done commercially on a voluntary basis by packers holding a certificate of Authorisation issued by the Agricultural Marketing Adviser. The packer may be a producer or an association of primary producers, village collectors or processors, the wholesale merchant or the large-scale manufacturer. There were by the end of 1942, as many as 736 centres in the country for the grading and marking of the various commodities. In all, commodities valued at Rs. 241 lakhs were sold under the AGMARK in 1942, *ghee* and butter alone accounting for sales of Rs 102 lakhs. To ensure proper and adequate grading the Government has appointed officials to inspect grading centres and examine graded produce. So far there has been no complaint of deliberate and improper marking of produce. Samples of graded produce are regularly collected by the inspecting staff from the market as well as from the packers's premises and these are examined at the various laboratories maintained by the Government for the purpose. *Ghee* and edible oil samples are analysed at the Central Control Laboratory, Cawnpore, samples of graded *gur* *bura*, butter aud fruit products at the Imperial Agricultural Research Institute, *ata* samples at the Agricultural College, Lyallpur and by the Chemist to C. P. Government at Nagpur, and that of rice by the Assistant Cerealist, Government Rice Farm, Shekhupura. Recently, the Government of India have sanctioned the posts of an Ata Analyst and Rice Analyst. In Delhi, an Egg Grading Demonstrator keeps a vigilant watch on the quality of AGMARK eggs. The finances incurrd by the Government in connection with grading and marking are met in part by the sale of Agricultural Mark labels.

Standard Contract Terms:—The Grain and Oil-seeds Conference, 1938 adopted Standard Contract terms for wheat and linseed.

Unanimous support could not be achieved particularly due to the excessive number of small futures trading associations. An informal conference of the three important trade associations was convened in 1941. The Conference suggested minor changes in the tolerance and limits of rejection for damaged grains, etc. in the standard contract terms. It was also of the opinion that the unit of transaction should be 25 tons instead of 500 maunds and hundred weight should be adopted as the unit of quotation. It suggested the lowering of the cleaning charge under 'Refraction' for linseed. These latter suggestions have not been accepted but barring these the standard contract terms for linseed have accordingly been revised. For wheat too the standard contract has been amended to incorporate the above mentioned suggestions. Standard contract terms for ground nut were settled at an informal conference held in Bombay in January 1939. Certain minor changes were suggested at the Bombay Conference of 1941. Two leading trade associations of Bombay have adopted the standard contract for Hand-Picked Selected groundnuts. Three leading exporters of groundnuts in Madras have also adopted the Standard Groundnut Contract. Standard Contract terms have not yet been accepted for other commodities.

Standard Containers:—Boxes of standard patterns have been used on an experimental scale in transit of eggs and fruits, and the Marketing staff in Orissa has conducted experiments on improved containers for packing 'gur'. The standard containers were proving their efficacy by reducing damage and loss and thus diminishing the costs of distribution. But the withdrawal by several railway administrations of concessional rates for standard containers in 1943 gave a set back to these experimental measures.

Market Information:—Arrangements have also been made for the better dissemination of market news. Hapur Market closing quotations in respect of wheat, barley, gram, peas, *arhar*, cotton, cotton-seed, rape seed, maize, *bajra* and *gur* are broadcast by the All India Radio and steps have been taken to include some other commodities and markets as well. The weekly market broadcasts have been made more comprehensive by inclusion of AGMARK products, which are being given publicity through newspapers and journals. The dealers of milch cattle in different places are now being kept informed of the daily prices, stocks, etc.

and a summary of livestock prices is broadcast for the benefit of listeners in rural areas around Delhi. To popularize AGMARK products and trading by statutory grades, AGMARK is being given due publicity.

For a proper organisation of agricultural marketing in the country, present marketing and assembling by the small scale producer with little means and knowledge has to be replaced by large scale marketing, storing and processing by the growers themselves linked directly with the consumers. Co-operative marketing alone affords only a half-way solution; for it is production, processing, storing and marketing by the producers in economic units that may finally solve the problem. What the petty producers in the country require is combination and collaboration, not only for sale but equally for production and processing by modern and scientific methods. It may be achieved either through the establishment of large-scale co-operatives or by organising collective farms. Agriculture in the country can no longer afford to have small-scale individual petty growers.

CHAPTER X.

The Agricultural Price-Structure.

Agricultural Prices and Expenses of Production.—The importance of fair prices for agricultural products cannot be overemphasised, for, unless the producers get fair monetary returns for their marketable surplus, no increments in efficiency and amount of production can successfully raise the standard of living of the masses. The point was well emphasised by Sir Jogendra Singh, Member for Education, Health and Lands, Government of India while presiding over the Agricultural Post-War Policy Committee on June 26, 1944. He pointed out that 'a cultivator could not be expected to increase production, if the increased production was to reduce the money value of his labour. That was a difficult problem but it had to be faced, not only in the interest of agricultural production, but in the interest of the general economy of the country. It was on the purchasing power of the bulk of our population he continued, that the future expansion of industry and indeed the raising of the living standard of both rural and urban population depended. It was on creating an effective and increased demand for goods, that employment for nearly 68 million landless village labourers could be found.'[1] In industry, the prices of the manufactured goods are determined in the long run by the expenses of production under the free play of economic forces. No producer gets less than what he spends in placing a commodity in the market including his normal profits. If he gets less, he ceases to produce the commodity while capital and enterprise are diverted to some other industry. The basic prices of manufactured goods are thus determined ultimately by the costs incurred by a representative firm in an industry. In agriculture, on the other hand, due to inertia, lag, and absence of any other alternative, production is carried on whether the prices are remunerative or not. There is no longer any causal relationship between expenses of production and prices, all the more so in this country, where farming has become a tradition and mode of living, being in no sense of the term an economic pursuit. Agricultural production is carried on whether the prices are paying or not for its suspension in many cases may mean actual starvation. In the manufacturing industry, expenses of production act and react on price through the medium of supply—the latter is

1. *Hindustan Times*, June 28, 1944.

curtailed pushing up the prices if these are not sufficiently remunerative to the producers. Such a course of action is not possible in the over-crowded agriculture of this country. On the other hand the farmers try to sell and produce more, if prices are low, to make up for the deficiency in their monetary returns and depress prices further by increased supplies of their produce. Likewise, when prices rise there is not the same incentive to produce more as is found in the manufacturing industry ; for agricultural production within any given period is limited to a very great extent by the rigid framework of its organisation. There is a greater inertia in agriculture than in the manufacturing industry. The net outcome is that the forces of supply and demand do not bring about an equilibrium between the expenses of production and normal prices of agricultural produce as they do in the case of manufactured commodities. Moreover, in India while agricultural prices tend to be the same over wide areas, expenses of production differ from one extreme to another almost from holding to holding. The amount of produce raised from a holding is so small at an average that it hardly exerts its pressure on supply and prices. The expenses of production on a holding have therefore little to do with the prices of agricultural produce on it, and under the free play of economic forces in a system of small-scale farming, there is almost a complete divorce between the farmer's prices and his expenses of production. Supply and demand, of course, determine market prices, but without the least reference to the expenses of production. There is therefore, a great need for regulation of agricultural prices in India so that they may not cross the rock-bottom level menacing both agriculture and industry or may not soar so high in an opposite case as to lead to social disaster. The task is difficult as the machinery required must have devices to safeguard against the minimum and the maximum levels so as to keep agricultural prices within these predetermined points. It is delicate, for the fixation of these levels cannot be effected with reference to any ascertained expenses of production. Yet it has to be done, so that economic development of the country may not be jeopardised, either by a low purchasing power at the disposal of the cultivators, or by too high price for food and raw materials as to minimise the scope of manufacturing industries at any time.

Basic Prices:—Admitting that expenses of production do not determine the prices, a farmer receives, what factors then govern

the prices of agricultural produce in the country ? It has been observed that the farmers' prices or the village prices depend at any time on the prices prevailing in the nearest market or *mandi*. The prices in the secondary *mandis* depend on the prices in the principal *mandis* in the country, which are all inter-related. Due to imperfect communications and friction of other economic forces there is always a lag between the prices in the principal *mandis*, the secondary markets and the villages. The price in the principal wholesale market of an agricultural commodity is however its basic price and the other two follow it with varying degree of differences and lag according to circumstances. In the principal *mandi*, basic prices of cereals in general are inter-related and depend on the prices of wheat and rice, while those of fibres, oilseeds and sugarcane are more or less independent of each other at any given time. To understand the determination of prices therefore, let us study the factors governing the basic prices of these main groups of agricultural commodities. To begin with cereals and other food grains, it has been noticed that the wheat and rice prices are the central prices round which the prices of other food grains oscillate at a distance, which in each case is determined in the first instance, by the coarseness of the grain in the estimates of the consumers *i. e.* its relative utility in comparison to wheat and rice and secondly by the amount of its own supply in any particular year.

Basic Price of Wheat:[1] —The prices of wheat in the principal *mandis* are highly co-related. In a study of prices of cereals in the United Provinces, Mr. Pande has come to the conclusion that, 'Import duties, by hampering free competition, tend to break the unity of world market, with the result that world economy resolves itself into an aggregate of more or less independent national economic systems. All influences due to changes in foreign prices are shut out by the invisible wall set up by an import duty.' Since the imposition of an import duty on wheat, foreign influences had little influence on prices of wheat in India. But if foreign competition has not been an actual force in the years preceding the present war, it is not necessary that it may continue as such in the post-war period. On the other hand, in so far as the country has become dependent on imports of wheat to make up the deficiency in its total food supply, foreign competition in all pro-

1. See Prices of cereals in the United Provinces by J. K. Pande.

bability, will be an important governing factor in the determination of basic wheat prices in the country. Actually, during the period preceding the imposition of import duty on wheat, the price of wheat at Karachi followed to a very marked degree the fluctuations in the foreign prices of wheat. In future, the prices of wheat in Australia may exert considerable pressure on the prices of wheat in India. Within the country, the price of wheat in the principal *mandis* prior to the enforcement of War-time measures of control were highly influenced by each other. These of course differed from market to market according to the distance of a *mandi* from the assembling centre, cost of transportation, efficiency of the market, merchandising charges and terminal taxes, etc.

Mr. Pande's study of the prices of cereals in the United Provinces reveals that the basic prices of wheat are influenced by the following :—

(*a*) Variations in Indian demand during the course of any one year appreciably effect the price in the same year as well as in the two succeeding years, the effect being greatest on the price in the next succeeding year.

(*b*) The effect of Indian demand on price is exercised not directly but indirectly, through area.

(*c*) Exports effect the price not only the same year but also in the succeeding years ; prospects of exports also influence price.

(*d*) Area in any year has a considerable effect on the price in the same year as well as in the two succeeding years.

(*e*) The effect of yield on price in the same year is significant, and is slightly greater on the price in the next succeeding year ; prospective supply also plays an important part in determining the price.

(*f*) There is little co-relation between Indian and foreign prices of wheat at present.

The basic prices of wheat are thus determined by the action and interaction of the forces of supply and demand. But these forces in the long period do not represent the actual supply and demand only but include the prospective ones as well. There are therefore

not the 'visible' forces which primarily determine prices at any given time but the forces as estimated by speculators. Speculation thus plays an important role in the determination of basic price and in the country there is more of illegitimate speculation than the scientific one. Consequently, the prices at any one time in the principal *mandis* may have no reference to the actual conditions. To remedy the evil, speculation should be limited and accurate statistics should be published in time.

Another factor, which may be mentioned here is that the demand for foodgrains is highly inelastic, and therefore, as observed by George King, in general, a given percentage decline in the available supply results, in the case of foodgrains, in more than proportionate percentage rise of prices. In other words, the rise in prices of foodgrains is in general more than proportionate to the deficiency in the supply.

Basic price of Rice:—Rice occupies a peculiar position as the country has never been self-sufficient in its production with the result that the country in spite of being the largest producer of rice in the world does not influence its price to the same extent to which Burma does, on account of the surplus which it always has for exports. The price of rice in the world market is determined by Rangoon. In an interesting paper read at the second conference of the Indian Society of Agricultural Economics held in April 1941, Dr. Ahmad Khan pointed out that the exportable surpluses of the three countries namely Burma, Indo-China and Siam play a most important part in determining rice prices. The influence of foreign competition or imports is more pronounced on the prices of rice than is the case with wheat. The Indian grower may receive very poor prices on account of a bumper crop in Burma or may get very high prices for his produce because there are no imports of rice from Burma. In any case, Burma is like a marginal seller in the Indian market so that in spite of selling relatively a small percentage of the total rice handled in the Indian markets, its prices influence to a very great extent the prices of certain types of Indian rice with which it competes. The Report on the Marketing of Rice in India shows that although world prices of rice have little *direct* influence on Indian prices as a whole, 'In the maritime provinces of Bengal and Madras, however, the prices of certain cheap domestic rices *e. g. Kazla* in Bengal and *Kusuma* in Madras show a trend similar

to those of Burma rices of such qualities as are ordinarily imported into India in large quantities, *e. g. Small Mills Special* or Broken No. 3.' In so far as prices of the different qualities are more or less competitive the prices of Burma rice *indirectly* influence prices of all qualities of rice handled in the Indian market.

Moreover, the world prices influence the prices of such other varieties as enter the export market. 'For example', the Marketing Report points out, 'the prices of *Sirumani rice*, which has a special outlet in Ceylon, are governed mainly by conditions in Ceylon. The prices of *Seeta* rice at Calcutta show a general relationship with London prices, [illegible] a very wide difference exists between the prices in the United Kingdom of the handpounded *Sceta* rice and the *Cleaned Patna* rice, which is the name given to the product obtained by re-milling *Seeta* rice and giving it a high polish'.

Since the greater portion of rice produced in a locality is sold within a comparatively circumscribed area, there is greater lag in the prices at different centres than in the case of wheat. Prices at consuming centres are much higher than at places whence supplies are drawn. Price variations are also very great in rice according to its quality—whether it is fine, medium or bold, whether it is raw or parboiled, whether it is hand-pounded or machine-milled, whether it has a natural tint or is artificially coloured and on the age and the proportion of impurities, broken grains, etc. In the country as a whole, the price differences arising from variations in grade or quality generally range between roughly 10 annas to Rs. 1-4-0 per maund in the case of fine rices and from about 2 annas to 10 annas per maund in the case of medium and bold rices.

Finally, in Bengal and Madras, there is a close relationship between the prices of paddy and rice, which however, is not to be found in respect of the fine varieties of Northern India, which are very susceptible to breakage and often involve a good deal of dressing and sifting.

Cane and Sugar prices [1].—The prices paid for cane by sugar factories largely depend on the prevailing prices of sugar as well as *gur*, which provide a maximum and minimum limit for the former. The Governments of the United Provinces, Bihar and Madras in British India fix minimum prices for cane, which repre-

1. Report on the Marketing of Sugar in India and Burma, Chapter V.

sents about 87 per cent of the total cane purchased by vacuum pan sugar factories in the country. Among the Indian States statutory minimum prices for cane are fixed by the Governments of Mysore and Rampur. The prices fixed in the United Provinces and Bihar are fixed on identical basis while those in Mysore and Madras bear no relationship to these. The cane prices determined in the former two provinces are based mainly on prevailing price of sugar and there is no attempt to co-relate them with grower's expenses of production. Even the prices of *gur* or the nature of the current crop is not taken into consideration in fixing these minimum prices—the sole intention being to enable the cultivator to get a fair portion of the sugar prices realized by the factories. The minimum prices fixed for cane in the United Provinces towards the end of 1936-37 did not cover even the costs of producing cane. In 1939-40, a sliding scale based on sugar prices, but with an irreducible minimum of 5 annas per maund, was adopted and the basic price of sugar was taken to be Rs. 7-10-0 per maund. In 1940-41 the minimum price of cane was reduced to 4½ annas per md. Outside the United Provinces and Bihar a flat rate is fixed for the whole season. On the whole, the fixation of cane-prices in different parts is not based on the relative costs of production and this may result in a serious dislocation of the industry. The Marketing Report suggests that the best course would be to fix minimum prices of cane for different tracts in accordance with their costs of production and to regulate the prices of sugar in a way that factories may be in a position to pay at least the prescribed cane-prices. Prices differ at present between different areas. The prices paid in the United Provinces and Bihar have been similar but elsewhere the differences are considerable. Sugar factories generally pay for cane on the basis of weight alone and the cultivator does not get any premium for his relative better quality within the improved medium varieties of sugar-cane.

The prices offered for juice by *Khandsaries* are mainly based on the expected prices of *Khand* in the season concerned. Ordinarily a cultivator is a loser by selling juice.

The price of *gur* depends chiefly on home production as there is very little of foreign trade in this commodity and the carry over at the end of a year cannot be large due to its perishable nature. The prices in any particular season are influenced, therefore, to

a very great extent by out-turn in the season. The quality of production differs from tract to tract and hence there are price variations in between the different markets according to the differences in the average quality of production. There are price differences on account of the distance from the producing centres, cost of transportation, merchandising charges, etc. Thus the prices of *gur* in any particular season depend chiefly upon local supply and demand and rise with a fall in production and *vice versa*. But there are very irregular tendencies in *gur* prices, which are mainly due to the absence of information about *gur* production. It is therefore essential that complete and reliable information about *gur* production should be made available earlier in the season.

Like *gur*, the price of white sugar in India depends chiefly on home production; and since August 1940 the Sugar Commission fixes both the selling rates and quotas for the various factories. The basic price for average quality sugar is arrived at in the beginning of each season on the basis of cost of production including profits and the various incidental charges. The prices obtained by sugar factories vary a little between the different parts of the country, the difference being due to the freights which they have to incur in putting their produce in the market. There are some differences due to colour and size of the grain in the case of crystal sugar.

Since 1936, there is close resemblance between the price movements of sugar and *gur*. The former are obviously higher than the latter. The cane and *gur* prices are competitive to the extent that when prices paid by the sugar factories for cane are not relatively high, the cultivators divert their supplies and manufacture more of *gur*. But the two products are not good substitutes for each other and sugar cannot be used for *gur* to any great extent and *vice versa*. Hence the inter-relationship is not simple or close. In any case, the prices obtained by the cultivators bear no relationship to the expenses of production.

Prices of products grown largely for export—Typical of such commodities are linseed, cotton and tobacco. In case of agricultural products, in which exports play an important part, foreign competition and prices obtained in foreign markets are the main determining factors in their prices in the principal markets of the country. To illustrate, with reference of the prices of linseed, it is found that in general Indian prices follow the course of price for linseed in other

important international markets, e.g., Buenos Aires, Duluth (U.S.A.) and London[1]. In the case of cotton, prices are mainly influenced by foreign demand and the prospects of exports and have little reference to the expenses of production in the country.

To sum up, prices of agricultural commodities in India tend to be similar over wide areas after making allowance for distance from the producing areas and costs of transportation; while the expenses of production differ considerably from one tract to another tract. In case of sugarcane alone, it was estimated that the normal difference in the pre-war days in the cost of raising a maund of cane varied from 3 annas to 6 annas. This is only a typical case. There is again a complete divorce between the expenses of production and the prices obtained by the farmers. Under the free-play of economic forces the grower may receive any price, which may be fair, grossly inadequate or high. Quality is seldom a factor in the determination of prices and fluctuations in different periods of the year are wide with a marked depression at the harvest time. There is a great need for regulation of prices with a view to bring about fair and stable levels, to ensure both agricultural and industrial progress in the country.

Recent Price Movements :—History has nothing to offer to compare with the disastrous crisis of the year 1929, which overtook an already weak trend in the cycle of prices. One of the outstanding development of the slump was the marked dispersion, that it caused among the various price groups. There was a moderate decline in the general price level during the quinquennium 1925-29, but that did not effect to any great extent the parity between the prices of manufactured articles and those of agricultural produce. But the par of industrial and farm prices was affected adversely against the interest of the cultivators during the Depression. It is, of course, not correct that the par or level of the relative prices should be permanently fixed or the ratio of prices must not be changed. But economic interests of the country are served best when this balance moves in a way as to raise the general tempo of production and in consequence the standard of living in general. Under normal conditions of economic progress, since agricultural production is governed by the law of Diminishing Returns and the demand for food articles is more or less inelastic, and industrial

1. See the Report on the Marketing of Linseed in India.

progress and development are synonymous with reduced expenses of production, changes in the ratio of industrial and agricultural prices are likely to be in favour of the cultivator. But if the price parity moves against farmers, the situation implies maladjustments in productive economy and causes further serious dislocation in economic structure of the country to the detriment of the agriculturists as well as the manufacturers. The entire economic solvency of a country like India is manaced all the more by such cricumstances, for the earners in this country are, in the main, dependent on ordinary cultivation and a reduction in the relative purchasing power at the disposal of agriculturists causes a more than proportionate fall in the demand for manufactured goods. It was such a situation, which confronted the country during the Great Depression. My survey[1] of agriculture in the Depression in the United Provinces reveals that the ratio between the level of farm and industrial prices was 110 in 1929 assuming the ratio of 1913=100. During the slump, the fall in agricultural prices was more steep than in industrial prices. The price parity fell to 68 in 1931 and then gradually improved being 81 in 1939. There was on the whole a less steep decline in the prices of the commodities, which the cultivators purchased than in the general price-level of their own produce. It was not compensated or balanced by any proportionate fall in their expenses of production, certain elements in which on the contrary, revealed a *biased rigidity*. The cultivator suffered both as a producer as well as a consumer and his suffering had certain indirect effects on the prospects of the manufacturing industry. The question of an *optimum parity*, a level which, obviously should move with the economic progress in the country, at which prices of the various groups ought to have been stabilized, did not receive any attention, whatsoever, during the slump. Anyway, dislocation in the agricultural industrial price equilibrium caused a serious reduction in the standard of living of the people and at the same time resulted in an unprecedented economic regress. To safeguard against repetition of such a national calamity, it is urged, that full attention should be paid to the maintenance of a balance between farm and industrial prices in the post-war period.

It may also be noted that within the group of farm products, price movements of the different crops were not parallel. The prices of those crops, which are amenable to foreign influences to a great

1, Unpublished survey of Agriculture in the Depression—1925-1940

extent, declined at a faster rate than of those, which do not enter international trade. Likewise, the fall in the prices of commercial crops was more steep than in the case of subsistence crops. The table given below illustrates these trends in the relative price movements of agricultural commodities in the United Provinces :—

Table[1]

Index numbers of the agricultural wholesale prices in the United Provinces 1913=100

	Rice	Wheat	Gram	Arhar dal	Linseed	Sugar (raw)	Cotton	Tobacco
1925	136	166	137	133	164	216	170	127
1926	147	165	152	167	136	225	134	144
1927	149	149	161	194	134	154	111	150
1928	142	153	172	185	132	165	148	122
1929	152	148	193	170	151	185	129	121
1930	114	98	136	133	123	156	75	103
1931	80	72	82	106	79	106	58	82
1932	85	91	83	103	67	88	64	35
1933	81	86	85	86	65	77	55	35
1934	73	76	80	84	69	102	57	40
1935	85	81	81	108	81	127	69	56
1936	83	85	77	102	85	87	66	64
1937	89	102	89	....	....	90	70	....
1938	82	81	89	....	....	108	53	....
1939	89	90	117	....	....	176	52	....

On the whole, prices of the cash crops fell to a greater extent than the prices of the crops grown for domestic consumption by a farmer. Again, prices of the crops meant for export, like linseed, cotton and tobacco, suffered the severest falls, suggesting that the agricultural situation in the country necessitated wide readjustments in crop production to bring it in harmony with national economy. It did not demand the enforcement of a policy of restrictionism but a rationalisation of agricultural industry.

1. Agricultural Prices in the United Provinces by Dr. Raj Bahadur Gupta.

War-time Price Trends—At the outbreak of the present war, farm prices, in general, had not recovered to the same extent to which prices of the manufactured articles had improved. As compared to the pre-depression period the parity between the farm and industrial prices was against the cultivator, and the war, by checking the free flow of imported manufactured articles turned the scales all the more against agriculturists. During at least the first three years of the war, rise in the prices of agricultural commodities was little while the prices of raw materials and manufactured articles improved considerably hitting hard the economy and standard of living of the cultivator. The extent of the disparity in the movements of the various price groups may be judged by the statement[1] given below :—

Index Numbers of Wholesale Prices in India (Based on quotations in the last week of each month; Base 19th August 1939=100; source: Economic Adviser to the Government of India).

Year and month	Food and Tobacco	Other Agr. Commodities	Raw materials	Manufactured article	General Index.
August 1939	100·3	100·7	100·2	100·0	100·3
August 1940	100·2	98 2	118 9	109·3	108·4
August 1941	128 6	152·7	147 2	161·2	142·5
August 1942	160·2	141·6	161·8	174 6	161·1
August 1943[2]	208·2	217·3	183·8	251 6	238·0

Agricultural prices, particularly, of food and tobacco lagged much behind the prices of raw material and manufactured articles and the barter terms of exchange moved rapidly against the cultivator, a tendency which was arrested after the fall of Burma. Later on, due to the cessation of the imports of rice, and the increased demand for food and agricultural raw materials within the country partly due to war and partly due to other factors, the rise in the prices of agricultural commodities was greater than in the case of manufactured articles. It was in the fourth year of the war that the pre-war parity between the industrial and the farm prices was

1. Reserve Bank Report on Currency and Finance for the year 1942-43 p. 72

2. *Capital* June 1, 1944, page iii.

obtained, but cultivators stood to suffer meekly until the first quarter of 1943 due to a lag in the upward trend of prices, as they had been suffering even before for a decade, due to the same factor in the period of Depression and Recovery. The full extent of loss to cultivators due to the disparity in the price movements is not brought to light by the index numbers on the Base 19th August 1939=100 as at the outbreak of the war farm prices were at a lower level than industrial and other prices. Consequently, the following statement of index numbers on the base July 1914=100 brings the disparity into a clearer perspective :—

Index Numbers of Wholesale Prices at Calcutta by groups of Articles

(Prices in July 1914=100)

Period.		Cereals	Pulses	Sugar	Tea	Other food Articles	Oil Seeds	Jute raw	Cotton raw.
July	1939	86	99	164	142	125	106	80	75
July	1940	99	101	157	149	146	106	79	87
July	1941	112	105	145	202	178	103	77	77
July	1942	157	162	208	241	278	143	77	96
July	1943	498	393	365	130	580	284	129	183
April	1944	243	319	352	126	563	317	123	141

OTHERS

	Mustard Oil	Cotton Manufacture.	Hides and Skins	Metals	Other raw and manufactured articles
July 1939	81	106	67	147	95
July 1940	78	122	72	175	115
July 1941	78	179	74	209	126
July 1942	85	....	86	273	147
July 1943	207	....	95	332	207
April 1944	232	....	103	295	274

Obviously, agricultural prices after the first quarter of 1943 moved up much faster than the prices of manufactured articles and by the summer of that year had become quite disproportionate to the general price level prevailing in the country. The rise was particularly sharp in the case of food articles. After that the prices of manufactured articles lagged behind ; and at the present par of prices, agriculturists obviously, gain by the barter terms of exchange. The parity at one time was too much tilted in their favour as to menace social security in the country. The present position is not so serious and yet it calls forth for continuous efforts to improve it and establish an optimum parity between the two major groups of prices.

Rise in the prices of agricultural commodities during the war period has been, to a great extent relative to the rise in the general price level and hence the causes lie much deeper in the inflationary forces, rather than, in the structural organisation of the agricultural industry it-self. To that extent, but to that extent only, any advantages that might have accrued to the agriculturists have been offset generally by the increased expenses of production and higher costs of living. But agricultural products have registered an additional und unprecedented rise over and above that in the general price level since February 1943, which is an absolute rise, symbolised in a widespread famine on the one hand and a serious dislocation of industry on the other. It is true that the peak levels attained in August and September 1943 no longer prevail due largely to the measures adopted by the Government of India, and the prices of cereals by April 1944 were not even half as high as than[1]; and yet, the current agricultural prices are not in harmony with the general price level in the country, while the prices of food crops in particular, continue to cause grave concern.

High Prices of Food Grains—The disproportionate rise in the prices of food stuffs since the beginning of the year 1943 has been one of the outstanding features of the war-time price trends. The index numbers reproduced below give an idea of its extent :—

1. The Calcutta index numbers for wholesale prices of cereals 1914=100 was 243 for April 1944 and 572 for August 1943.

All India Index Numbers of commodity Prices[1] *for 1943*
(Base: Week ended 19th August, 1939=100)

	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November.
Rice	218	218	496	634	780	951	951	1034	847	602	602
Wheat	252	332	312	308	323	330	346	371	383	380	379
Raw Materials	171 5	172	172	174·2	173·4	178·4	182 8	183·8	181·4	184·6	189·1
Manuf. articles.	224·1	225·5	227 0	235·6	246 8	257·5	259·5	251·6	251·3	255·8	256·9
All Commodities	190·4	197·6	213 5	227 9	236·7	241 7	239·3	238	236·4	240 8	240·1

The situation may be reviewed in its two aspects *viz.*, the unprecedented rise in 1943 in food prices, while rise in the general price level after May was little, and the tenacity with which these high food prices tend to persist resulting in a serious disparity between the food and industrial prices. The former is associated with the food crisis in the country, culminating in a widespread famine, which took in particular, a heavy toll from Bengal. The second is explained in part by the causes responsible for the first, although the difficulties and limitations of price control in India are also responsible for it. We shall have an opportunity to discuss these at a later stage. For a review of causes of the food crisis, an extract from the report of the Food Grains Policy Committee appointed in July 1943 is reproduced: 'There is nothing in the internal situation in India to suggest that, apart from the cessation of imports from Burma and the vicissitudes of Nature which effected Bengal adversely in 1942 and 1943, and have also influenced the Madras position, the absolute physical volume of supply has been impaired. But it is not doubtful that (*a*) the amount actually available out of the physical supply has decreased and (*b*) that demand, in relation to the availability of supply, has increased.' This naturally resulted in an absolute rise of the food prices. The accentuating causes on the demand side were '(*i*) the combination of an adverse supply situation in Bengal with an adverse psychological situation due to proximity of War Zone, (*ii*) a diminution in the relative magnitude of the

1. Reproduced from *Commerce*, June 1944, page 899.

marketable surplus through increased holding and/or increased consumption by the cultivator who in the depression period was probably eating less than was requisite for full efficiency, which reacts with disproportionate effects upon the urban consumers as a whole, (*iii*) probably some increase in the *per capita* consumption by those in receipt, for the first time, of higher money incomes, (*iv*)a decline in the absolute size of the rice carry over, (*v*) some withholding from sale of available stocks for "investment" and 'black-market' reasons, (vi) an increased demand, which could not always be satisfied and therefore exerted an altogether disproportionate influence on prices, for personal and family "security" reasons'.[1] The 'denial policy' adopted by Military Authorities, although involved insignificant amounts, effected adversely the public mind in Bengal and was, to that extent, a contributory cause of rise in prices. For bringing about a proper balance between the various groups of prices therefore, apart from administrative measures of price control physical supply of goods has to be increased.

Prices of Chief Crops of Export—The prices of the chief farm products of export did not obviously share the unprecedented rise in food prices. Cotton prices, until the crop of 1942 lagged behind the general price level but have marked a steep rise since then. The index numbers of wholesale prices of cotton (base 1939=100) moved up from 130 in August 1942 to 261 in July 1943. But the administrative measures have now brought about a stability in the cotton prices at much lower levels. Judged by the general price level in the country, the present prices of cotton may even be called depressed. Likewise, in the case jute of war-time prices have not been disproportionately high, although the levels obtained since the beginning of 1943 have not been low. There is still ground to hold that the present jute prices are low as compared with the general price level. In the case of oil-seeds, prices during the first two years of war actually fell, but recovery afterwards was rapid and by summer of 1943 the prices had recorded a rise of 200 per cent over the pre-war level. The rise still continues although the momentum has now lost its force. The occupation of the Phillippines and the Netherlands East Indies by the enemy in 1942 cut off the supplies of coconut oil to the Allied nations. This scarcity of coconut oil resulted in a steep rise of

1 Report p. 19.

vegetable oils and oilseeds. Groundnut which could hardly find a buyer at Rs. 24 per candy in August 1940, was quoted as high as Rs. 131 in 1943. The index number of wholesale prices of linseed (prices for week ending 19th August, 1939=100) rose from 109 in October, 1941 to 254 in May, 1943. Leaving aside the case of oil-seeds, prices of the cash crops of cultivators have, on the whole, lagged behind the general price level. The lag was particularly marked in the first three years of the war. In the case of sugar and tobacco war-time prices were actually lower than their pre-war levels until October 1941 in the case of the former and April 1943 in the case of the latter. Even the present levels are much below the general price level.

To sum up, rise in the prices of agricultural commodities has not been equally marked in all cases. Leaving aside the case of food crops and oil-seeds, there has been a lag in the prices of cash crops and the rise in the general price level. At present, the prices of food and oil seeds are disproportionately high as compared, either, with the prices of manufactured articles, raw materials, or other agricultural commodities.

Effect on Agriculturists :—The general effect of war-time trends in prices may better be studied in two distinct periods *i.e.* (1)up to the close of the year 1942 and (2) from the beginning of the year 1943. During the first period agricultural prices were rising but invariably lagged behind the prices of raw materials and manufactured articles. Certain elements in farmers' expenses of production therefore, were rising during this period at a faster rate than prices of farm products; while certain other elements including rent, Government irrigation charges and interest were more or less fixed. Consequently, increase in his expenses of production taking all the elements into consideration perhaps lagged behind agricultural prices during this period. Yet advantage to growers was little as the balance of farm and industrial prices was turning against them, so that their purchasing power, in spite of higher agricultural prices, was greatly reduced. This adversely effected their demand for manufactured goods and their standard of living. In the next period that followed, food prices suddenly shot up and oil-seeds followed. The former soared to peaks, quite in disharmony to the general price level, and growers of the food grains got 'profiteering' barter terms of exchange. But

such advantage has obviously been confined to the marketable surpluses of their crops, which represent but a minor fraction of the total out-put. An average cultivator in the country has very little food surplus to sell. It is the large scale producer, who has benefitted more as he has a much larger surplus than the small scale subsistence farmer. On the other hand large numbers of growers of non-food cash crops, who are obliged to buy their food, have been hit hard as prices of their crops have lagged behind the general price level and the prices of the foodgrains. The parity of prices has moved much against them reducing their standard of living substantially. Thus growers of cotton, jute, sugarcane, and tobacco must have fund it increasingly difficult to purchase even the minimum supplies of food. Moreover, rentiers receiving fixed money rents and land-less proletariat receiving a money wage cannot obviously benefit by a rise in prices. Rent and wages as usual lagged behind; and hence, the disproportionate rise in prices of food grains has caused hardship to the recipients of these as well. This hardship has been almost calamitous in the case of labourers in spite of higher money wages. How agriculturists have been the worst suffrers on account of this steep rise in food prices may be judged by facts brought to light by the Calcutta University Sample Survey of the destitutes in the Bengal Famine of 1943. It revealed that 72·7 per cent of the sufferers were farm labourers and cultivators. It is therefore in the general interests of the agriculturists that food prices should be levelled down to parity with industrial prices. One redeeming effect of rise in the general agricultural price level is that cultivators stand to gain as debtors. They may come out of the present war in a more solvent condition as far as this aspect is concerned.

To conclude, interests of cultivators would be served best by a proper parity between prices of the various groups. It implies at present a further lowering of food prices, a little stimulus here and there in prices of some cash crops and stabilisation of the prices of manufactured articles and raw materials. To achieve such a price parity, the country requires a more comprehensive and effective regulation of prices.

Price Control:—In exercise of powers conferred by the Defence of India Ordinance, the Central Government has delegated to Provincial Governments its authority to control prices of the neces-

saries of life. Several Provincial Governments initiated price control measures on the lines prescribed in the Government of India's Notifications. But 'necessaries of life' did not include food stuffs until certain categories of foods, including grains, pulses and flour were specifically added by a notification of May, 25th 1940. As a matter of fact, in the beginning of the present war the government did not consider it necessary to control agricultural prices and the Commerce Secretary to the Government of India, speaking on a Resolution moved in the Council of State in March 1940, expressed the opinion that no action should be taken to arrest the normal rise in the prices of the agricultural produce. The Economic Adviser to the Government of India in his memorandum on prices even welcomed the rise in the prices of the exportable produce as it meant more spending power. The two Price Control Conferences held in October 1939 and January 1940 did not consider it necessary to interfere with the trends of agricultural prices. The question of controlling agricultural prices did not seem even to the representatives at the the third Price Control Conference, which met in October 1941, to be causing anxiety. It however, ended with a proposal to watch the trend of the need for control of food stuffs. In the meanwhile, the outbreak of war betwene Russia and Germany on 22nd June, 1941 reinforced the rising tendency in wheat prices. There was a feverish speculative activity and dealers began to hoard stocks and the rising trend continued unabated. On November 2, 1941 the Government of India issued a Press Note in which they warned dealers that they were actively examining the question of controlling wheat prices. On 5th December 1941, Wheat Control Order was promulgated, fixing the maximum wholesale prices of wheat at Rs. 4-6-0 per maund at Lyallpur and Hapur. The appointment of a Wheat Commissioner for India was also announced. The Provincial Governments were requested to instruct their Deputy Commissioners to enforce control in their respective districts. The order was made more comprchensive in the course of 1942 by (a) control over movements of wheat between Provinces and between Provinces and States, and (b) control over Futures and Option Trading. By a Notification dated 25 January 1943, wheat was decontrolled to ensure freer supplies.

The fifth Price Control Conference held in April 1942 emphasised the importance of linking control over distribution and recommended the licensing of wholesale dealers by Provincial and

State Governments and that in granting licences the existing channels of trade should as far as possible be maintained. These recommendations were implemented by the government and the Food Grains Control Order was issued in May 1942. It provided that all persons other than producers of food grains, engaged in any undertaking involving the purchase, sale or storage for sale in quantities exceeding 20 maunds in any one transaction of any of the specified foodgrains shall be required to have licences. Licence holders were required to keep accounts in a prescribed manner and to submit monthly return of their purchases, sales and stocks. The order originally applied to major foodgrains, but minor millets and pulses were added to its schedule subsequently. By an amendment made on 5th February, 1943 hoarding of foodgrains was penalised and in May 1943, employers holding stocks for distribution to their employees were also brought within the scope of the order.

Anyway, the policy of price control did not succeed in wiping out black markets and was abandoned in the case of wheat in January 1943 although enforced again from the harvest of 1944. One of the more important reasons of the failure of the price control policy was that enough physical control over supplies could not be obtained. It must be conceded that the problem is beset with peculiar difficulties in India, where production is being carried on by millions of petty agriculturists with little education. These producers have small surpluses to sell, while markets, have a very imperfect organisation. Consumers are not organised and hoarding is a constant evil with all sections of the community—producers, traders and consumers. It has been encouraged by an actual shortage of supply and difficulties of distribution. Rationing, without which a system of price control of food articles (which are in deficit in the country) cannot succeed, has its own difficulties.

The 'Free Trade Policy' in foodgrains, which as we have already seen, was inaugurated early in 1943 resulted in sudden rise in prices and embittered relations between the Provinces and the Centre. The Government had to summon (a) the (Short term) Food Conference which assembled in Delhi on July 5th, 1943 and (b) to appoint a longterm Foodgrains Policy Committee. As a result of deliberations of the Food Conference, the Free-Trade episode was over and the Provinces had restored to them since

August 16, 1943 the power over movements, which they had lost under the 'Free Trade' regime.

The Foodgrains Policy Committee, although unable to attain complete unanimity on the question, recommended that statutory price-control of all the major food grains should be instituted in all Provinces and States. The committee concluded: 'We dismiss at once, as utterly impracticable under present Indian conditions, the suggestion which has been put to us and which at times finds expression in the Legislature and elsewhere, that the food problem could be solved by leaving the established organs of trade utterly unhampered in their operations, *i.e.*, by reverting to "Free-Trade".

'It appears to us to be simply fantastic to imagine that the restoration of the unlimited right to buy and sell, from any one at any price, in any part of India, will, in the existing conditions of scarcity, give satisfactory results.' The committee further observed that in the absence of a statutory price control in the country the integration of Indian prices had ceased due to the fact that price control was being exercised by the Provincial Governments on a local basis influencing prices within their areas. They deprecated the creation of a series of "Nutritional Pakistans" in the country. The economic unity of India was menaced by such measures. The committee in recommending statutory price control suggested that prices in the Provincial areas should not be fixed without the consent of the Central Government, which should have the right to suggest changes both upwards and downwards. The committee laid down the minimum condition for the establishment of statutory price control as (a) adequate procurement machinery, (b) vigorous and drastic enforcement of the Foodgrains Control Order and of Anti-hoarding measures, and (c) effective control over transport. In addition to these, the existence of a Central and also of Provincial and State reserves was considered necessary to attain maximum chance of success. The recommendations of the Foodgrains Policy Committee were accepted in the main, by the Government of India and maximum prices of wheat were fixed again since the crop of 1944.

Price control is not confined to foodgrains alone. It is exercised with regard to sugar on an all-India basis under the Sugar Control order of 1942, which has been made very comprehensive since July 1943 and renamed as 'the Sugar and Sugar Products

Control Order 1943. Sugar now moves according to plan and factories have no direct contact with their agents. The Sugar Controller fixes the prices also. The 'Gur' control order promulgated in July 1943 gave powers to the Sugar Controller to fix maximum prices of *gur* for different areas and for different grades and at present no private distribution of *gur* is allowed from one Province to another. The Sugar Controller allots periodical quotas for the exports of specific quantities of *gur* from surplus areas to deficit areas. Maximum sugarcane prices continue to be fixed as previously by local Governments.

With regard to cotton, the problem in the early stages of the war was to check a downward trend. It was attempted by doubling the import duty on foreign cotton in January 1942. It however, had not the desired effect and the Government therefore intervened by entering as a purchaser in the market in late March 1942. But the tide had turned next year and there was hectic activity in the cotton market pushing up prices rapidly after March 1943. The Finance Member described this upward rush as a 'disgraceful and disgusting spectacle' and dubbed operators as 'economic saboteurs of Bombay'. The immediate effect of the Finance Member's speech was a drop in prices by Rs. 100 per candy. Prices, however, continued to be high and on April 30, the Government banned *Teji-Mandi* or option operation in cotton and prohibited forward contracts. On 18th May, the Government announced that trading in the (then) current forward contracts should be liquidated on 20th May at rates to be fixed by it. The Indian Central Cotton Committee recommended the fixation of minimum prices for cotton and suggested the reopening of Hedge contract. These recommendations were reinforced by the decisions of the Cotton Committee of the Textile Control Board. The Government agreed to permit resumption of futures trading on condition that it should be restricted to a maximum and minimum level of Rs. 550 and Rs. 400, respectively, in terms of the Indian Cotton Contract. On 18th November, 1943, the Government announced the maximum and the minimum prices for no less than 14 varieties of cotton and declared its intention to buy new crop under certain conditions. Jute prices too are controlled at present by the fixation of minimum and maximum prices. Similarly, attempt has been made to keep the prices of oilseeds within reasonable limits by prohibiting speculation.

Price control of agricultural commodities during the war period has been undertaken to prevent an onward rush in prices. Its machinery is being made more perfect each day and it may be hoped that, if the government takes in addition to administrative measures of price-control and rationing, effective steps to remove scarcity of goods and control the expansion of currency, a fair amount of success may be achieved. But the scope of price control should not be limited to a negative objective. Its true purpose ought to be the maintenance of a proper price parity and as such the fixation of floors is as important as the fixation of ceilings. It is true that the former are not of any practical importance at present. but for safeguarding the interests of the cultivators in the post-war economy, these may assume a great importance. Hence the principle of fixing minimum prices, as well, must be recognized from this very moment and the cultivators should be given a guarantee about that for the post-war period. In other words, price control should not be considered by the Government as a war-time expedient. Its machinery ought to be perfected for maintenance of fair prices, as a necessary instrument for reconstruction during the period of peace.

Fair Prices—It is not easy to determine fair prices in a country like India, where conditions of cultivation differ so widely The Foodgrains Policy Committee in considering the 'fair' level of prices from the standpoint of the cultivator pointed out that 'regard should be had to (a) the cost of articles entering into the cultivator's cost of production, (b) the cost of articles entering into his standard of life and (c) the cost of cultivation of marginal lands. By marginal land we mean..... land of less than, normal fertility, taking the average of a particular area as a standard.' In fixing fair prices for an agricultural product we should first take into consideration its expenses of production on a marginal holding including wages for family labour and profits. The price should be such at which the desired supplies and no more are produced in the country through its reaction on the margin of cultivation. The criterion may work well under a system of agricultural economy, where farming is taken as a business proposition. But under the existing conditions in the country, in so far as prices do not influence the margin of cultivation, fair prices cannot be determined with reference to this factor alone.

of the masses. The parity between the various price groups therefore assumes a greater importance than the cost of production. The central aim of price control should be to bring about such parity between the various prices—agricultural as well as industrial, that at any given time may enable an average man in the country to maintain the highest standard of living, practicable within the total goods available for consumption in the country. An ideal way of achieving this, so as to provide a growing market in the country for both agriculture and industries, would be to relate prices to the purchasing power of the people, a method, which may imply price control even at different levels according to a few broad ranges in the incomes of the purchasers. For each commodity two sets of prices *viz.*, producers' prices and consumers' prices might be fixed and then the principle of variation within a set be applied so that prices might be adjusted to the incomes of the people within a group or class. The abandonment of the system of linking the producers' prices with the consumer's prices may assure that producers in any industry, be it agriculture or manufacturing, would be at no relative disadvantage as compared with the other. Likewise, the adoption of differential prices according to circumstances may facilitate a fair distribution of the total wealth production necessary for a country aiming at self-sufficing economy. In the absence of any such arrangements there is always the serious likelihood of production exceeding the effective demand in a market. While planning for production we have also to see that those for whom we produce have sufficient capacity to absorb the goods or prices are within their range.

But difficulties in the adoption of a plan of differential prices on any wide scale are too numerous to make the system practical. There would not only be the necessity of extending price control further but its success would depend on a complete elimination of private trade and creation of State monopolies instead in the different trades both for procuring as well as for distribution. Procurement through State agency presents its own difficulties when produce has to be collected as in case of agriculture or cottage industries from millions of petty and unorganised growers. Distribution is also liable to be paralysed without a system of total rationing and full control of stocks. For the present, rationing of goods except in a few large towns is not a practicable proposition in the

rest of the country. Hence the system of dlfferential prices will have little chance of success except perhaps in a few essential goods. We may begin with rationed articles in the cities covering as many as can conveniently be controlled. But for the bulk of the goods, we may adopt some system of indirect subsidies, which may help in lowering the expenses of production. In agriculture the Sate may supply improved seeds, fertilizers, implements and water at concessional rates even below the expenses of production by levying some progressive tax, say a surcharge on income tax. Provision of free social services in the villages would be another way to improve the economic condition of the cultivator and give him an indirect subsidy in the right direction. Such methods have been adopted in other countries during the war.

To safeguard against any restrictive influences the need of stabilising prices of the different groups of commodities at a fair parity cannot be over-emphasised. Prices are complementary in the sense that no industry can develop for long or to any great extent unless the prices of its products are fair not only to itself but are so in relation to the prices of other articles so that their barter terms of exchange do not ultimately restrict their demand. To illustrate, if cultivators receive relatively low prices they have less purchasing power to absorb the products of the manufacturing industries. Hence, in order that industrial and agricultural development may be sustained we must have a growing market within the country, it is imperative that there should be a proper balance between farm and industrial prices. It has already been pointed out as to how that balance has been disturbed since the Great Depression and the problem before the future administrators would be to find a new equilibrium.

CHAPTER XI

Agricultural Credit.

Function of Credit: Agriculture as carried out in the country requires a nominal or only a minimum of working capital and yet the fact that agriculturists must borrow stands like an axiomatic truth. M. Louis Tardy in his *Report on systems of Agricultural Credit and Insurance* has emphasized the growing importance of credit for agriculture even in the western countries, where at present, 'the farmer, like the manufacturer and the merchant, found himself obliged to apply for credit in order to procure the considerable funds he required not merely for buying live-stock, implements and fertilizers, improving the land and altering or enlarging his farm buildings, but also, while awaiting payment of the price of his stored crops or the sale of those crops, for meeting current working expenses, especially wages, which are becoming a bigger and bigger charge in some countries where there is a shortage of labour.'[1] Agricultural credit in Europe has been primarily for production and in such countries of small holdings as Switzerland, Denmark, Germany and France it has even enabled the land-less labourers to become owner-farmers joining together for co-operative operations and thus derive the advantages of large-scale farming. The facilities available for agricultural credit in India have not been ordinarily yoked to achieve anything comparable with these. The poor economic conditions of the Indian farmer compel him to use his credit for meeting the deficit in his income rather than for production purposes. It is true that a proper organisation of agricultural credit system in the country is essential for agricultural progress and prosperity, but at the same time limitations of credit should not be over-looked. Credit by itself cannot make an industry go, which is otherwise unprofitable. 'Credit', observed the Bombay Banking Inquiry Committee, 'would merely supply grease to the economic machine, and it is essential that all possible measures should be taken to ensure the efficient working of the entire mechanism.'

Need for Special Credit System: Agriculture is a special form of activity and hence there are fundamental differences

1. Report p. 3.

between agricultural and industrial finance. The agriculturist is poor and illiterate often isolated and remote from the ordinary opportunities for obtaining credit. His business is a one-man concern, small scale and chaotic and hence his credit is limited. In general, agriculture is not capable of being concentrated and the device of raising capital by joint-stock enterprise is not open to a farmer. Man plays a much more important part than the machine, but his role is insignificant in comparison to that of Nature. The farmer can only hope while Nature largely determines production. Agricultural production cannot easily and quickly be adjusted to fluctuations in demand or to the changed economic conditions. Supply is inelastic and when once work has been started it cannot be stopped. There is thus a constant need for finance irrespective of the prospects of the undertaking. To the Indian cultivator, agriculture is more a mode of living than a business and this complicates the problem of agricultural credit still further for his production has to be financed even when costs ordinarily exceed the returns. He has hardly any security to offer and the best that he has is the land itself, which is a most unsuitable form of security for the commercial banks. A longer period is required for agricultural operations than for commercial or industrial operations so that even 'short-term' credit may be required for nine to twelve months. Profits in agriculture can hardly be estimated and are always uncertain. The farmer hardly knows the yield on his capital investment, but it has been observed in other countries that the yield on capital invested in agriculture is very low. Agriculture cannot therefore bear the same rate of interest as manufacturing industry or trade.

In consequence, the ordinary credit agencies find it difficult to finance agriculture. In its statutory Report, the Reserve Bank of India pointed out—'Apart from the special risks involved in agricultural finance the main difficulty arises from the fact that in India as in several other agricultural countries the majority of the agricultural population consists of small peasant proprietors and tenants with whom agriculture is not so much a profession as a mode of living. The handicap is not merely the lack of substantial assets which could serve as security but also, and possibly to a greater extent, the uncertainty of the profits from agriculture as it is generally carried on.....The question of agricultural

finance is therefore closely linked up, with the question of the improvement of agriculture.' In the opinion of the Reserve Bank the most suitable agency therefore, for supplying finance to agriculture must have an educative as well as a purely business side.[1] In other words special institutions are required for supplying agricultural credit to be constituted on co-operative and mutualist principles. These are such institutions that can meet the special requirements of the cultivators, *i.e.* granting loans corresponding to real needs of the farmers, supervising the use made by agriculturists of the credits granted to them, and lending money for sufficient duration at a relatively moderate rate of interest, appropriate to the remunerativeness of agriculture.

Normal Credit Needs: As producers, cultivators require (1) short-term or 'seasonal' credit to meet current requirements of their operations and to carry on until the harvest can be sold; (2) medium-term credit to purchase live-stock, farming implements and also to carry out improvements of an average duration, and (3) long-term credit for the purchase of land or to effect lasting improvements on their holdings and even for repayment of past debts. It is very difficult to estimate the credit requirements for working capital. The Central Banking Inquiry Committee after comparing the figures of rural indebtedness and the rough estimates of short-term credit given by some of the Provincial Banking Inquiry Committees took a figure of 300 to 400 crores of rupees as a lower limit for the whole of British India of the cultivators' requirements for short-term and intermediate working capital.

This was however not an estimate in any sense of the term. Estimates of the working capital in foreign countries indicate that in Europe[2] the value of the farming capital is ordinarily between two-thirds of and equal to the value of the land. Accounting for the fact that farming equipment at present in India is not even half as much costly as in Europe and the intensity of cultivation in the country is very low, the value of live-stock, farm implements and circulating capital may be taken to be, very roughly estimating of course, as half of that of land. The value of the latter in British India alone may be anything

1. Statutory Report p. 6.

2. The capital and income of Farms in Europe as they appear from the Farm accounts, for the years 1927-28 to 1934-35. (*League of Nations Publication.*)

from 1200 to 1500 crores of rupees. The working capital required for agriculture at a reasonable standard of farming will therefore be to the extent of Rs. 600 crores at least, and if the pitch of cultivation is to be raised to a higher level the country may require a further sum of Rs. 600 crores for its farming capital.

It is equally difficult to make even a rough estimate of the long-term credit requirements of cultivators. The Central Banking Inquiry Committee points out that if out of the total rural indebtedness of Rs. 900 crores a sum of Rs. 400 crores represents short-term and intermediate credit, the requirement for long-term credit to pay off old debts amounts to at least Rs. 500 crores. 'In addition, we have the items of improvement of land and methods of cultivation which require very large sums having regard to the fact that the cultivated acreage of agricultural land in India is more than 200 million acres. Next come the long-term requirements for purchase of land and building houses, setting up of irrigation plants and the like. No estimate is possible of the requirements of these various classes even in an approximate measure. We can only say that there is an almost unlimited scope for the grant of long-term loans to the cultivators in India.'[1]

Credit Agencies:—The main sources of rural finance are money-lenders, indigenous bankers, loan offices in Bengal, *Nidhis* and *chit* funds in Madras, Co-operative organisations, government, commercial banks, and the Reserve Bank.

Money-lenders: The bulk of agricultural finance is supplied by the money-lender, who is in some cases so by profession and only an amateur in others. The professional money-lender is usually known in the village as *bania*, but he is not always a *Vaishya* and may belong to any caste. He is a tradesman by occupation selling goods on credit and lending money in small amounts as his capital is small, rarely exceeding a thousand rupees. He seldom lends outside his own village for his personal knowledge of his clients is the basis on which he grants credit. More important than the *bania* is the *mahajan* in the village, who operates in a number of neighbouring villages and sometimes in several districts. He too may belong to any caste. His business is on a much larger scale amounting even to lakh of rupees in a few cases. Unlike the *bania* whose loans are usually of the kind called *dast garda* (qarza)

1. Report of the Central Banking Inquiry Committee p. 71.

or *hath udhar*, the *mahajan* advances on the basis of promissory notes and when the amounts are large on mortgages of land or houses. In addition, there are the urban money-lenders or the *sahukar*, whose rural transactions form only a part of his business. He advances loans either to the land-lords on the security of a mortgage of their property or to the *mahajans*. He also advances on *hundis*, and he like the village *bania*, combines the business of money-lending with other functions. Of quite another type are the itinerant or the peripatetic money-lenders, who grant loans to those who are not considered credit-worthy even by the village *bania* and the *Mahajan*. These include the *qistwala*, the *Rohillas* and the *Pathan* money-lenders. These are the most rapacious of the class and even use force in cases of default. They also combine some trade with their profession. There is also the *Beopari* selling animals on credit, *banjara*, *Behwari*, butchers by profession and the *pheriwala* selling cloth, spices and other articles, who all finance the cultivators to some extent. Fnally, the professional money-lenders include traders who advance on condition that crops will be sold to them at pre-determined prices e. g. the *kandsali* in the U. P. Among the non-professional or amateur money-lenders is a horde of petty Shylocks—from the Muhammadan *faquirs* to the *patwaris* and retired civil and military pensioners. These include a large number of land-owners and well-to-do tenants There is no great difference between the methods of the agriculturist money-lender and those of the professional money-lender. The U. P. Banking Inquiry Committee reports: 'Most of the *Mahajan's* competitors, however, and those the most important, are drawn from the very classes which supply him with the great majority of his clients. The rich landlord, lends to the poor landlord, to his own and other people's tenants; the rich tenant lends to his own and other landlords, as well as to his fellow-tenants.'[1]

Certainly, it is difficult to generalize for a heterogeneous group of this kind but usury and a number of malpractices are often associated with village money-lending. The Central Banking Inquiry Committee noted the following as the most common forms of questionable practices:—

(a) demand for advance interest,
(b) demand for a present for doing business,

1. Report Vol. I. p. 54.

(c) taking of thumb impresion on a blank paper with a view to inserting any arbitrary amount at a later date,

(d) general manipulation of the account to the disadvantages of the debtor,

(e) insertion in written documents of sums considerably in excess of the actual money lent, and

(f) taking of conditional sale deeds in order to provide against possible evasion of payment by the debtor.

And yet, the money-lender, acting on his slender resources and almost totally unconnected with the rest of the money market, undoubtedly serves a necessary function in the scheme of rural credit. But the credit, which he supplies is defective in more ways than one and the isolated *bania* stands in the way of an organized money-market in the country. Nicholson in his 'Report regarding the possibility of introducing land and agricultural Banks in Madras Presidency, 1895" aptly remarked: "It is then certain that the substitution of organised credit for that of the money-lender is a necessary development of civilisation; the individual system is only an elementary stage which must be eventually passed as general wealth, order, business confidence, and habits of association develop." But the system persists with astounding tenacity even at present. The Provincial Banking Inquiry Committees which examined the question whether the money-lender should be controlled by legislation were not unanimous in their recommendations. Regulation of money-lending however, attracted considerable attention during the Great Depression. The Reserve Bank of India has laid particular emphasis on it. It reported: "We are therefore in favour of reasonable legislation regulating money-lending and making registration compulsory for all money-lenders. We suggest further that apart from any penalties which might be prescribed in such legislation for violation of its provisions a procedure should also be devised for the inspection of the accounts of money-lenders.'[1]

Indigenous Bankers:—The primary business of an indigenous banker is banking rather than money-lending and as such he accepts deposits and deals in *hundis* as well. The Punjab Provincial Banking

1. Statutory Report p. 11.

Inquiry Committee refers to the further distinction between the indigenous banker and the urban money-lender in the following terms: 'The indigenous banker finances trade and industry rather than consumption; the urban money-lender consumption rather than trade. Both banker and money-lender advance partly with, and partly without, security but the banker more often with than without, and the money-lender probably more often without than with. The banker is generally particular about the objects for which money is required: the money-lender is less careful. A further difference, and one, no doubt, arising from the last two, is that most of the banker's clients repay punctually, and most of the money-lender's have to be pressed. The banker, therefore, can afford to lend at 6 to 9 per cent. and rarely goes beyond 12 per cent. but the money-lender commonly charges 9 to 12 per cent. and goes up to 18 per cent."

The indigenous banker finances agriculture only indirectly through local *sahukars* or money-lenders. The U.P. Banking Inquiry Committee distinguishes between the small *sarraf*, (who is primarily a bullion broker, deals in *hundis* and lends money on promissory notes, on mortgages of urban property and on the security of silver ornaments), and the *Kothiwal sarrafs* (who deal in *hundis*, advance money to landlords on mortages of their estates, and to traders, small *sarrafs* and *sahukars*, but always in large amounts). The indigenous bankers in all the provinces play an important role in the financing of internal trade and thus finance agriculture indirectly. These bankers however, are not directly linked with the general banking system of the country. It is a serious desideratum. The Central Banking Inquiry Committee recommended that the indigenous banker should along with joint-stock and co-operative banks be brought into direct relations with the Reserve Bank, and thereby provided with re-discount facilities from that institution.[1] The Reserve Bank has been making efforts in this direction but has failed so far for certain reasons.[2]

Loan offices of Bengal: Land mortgage banking rather than joint-stock commercial banks as in other provinces were initially developed in Bengal during the sixties and seventies of the last century. Funds in these loan offices are attracted by deposits and

1, Report p. 107.
2. For detailed discussion see further.

their main business is to lend money not only to *Zamindars* but also to actual cultivators. The greater proportion of loans is advanced against personal security at rates ranging between 12 to 112 per cent for unsecured transactions.

Nidhis and chit Funds of Madras: Nidhis are formed to provide to members facilities for savings, repayment of old debts and supply of credit at reasonable rates. Loans are given to members only, although outsiders may also be accommodated if there is a surplus. The funds are raised primarily by subscriptions to share capital. These have mostly developed in the Southern and West coast districts of the Madras Presidency particularly in Coimbatore. The Nidhis are registered under the Indian Companies Act. The Chit funds have arisen out of the necessity for a lump sum to meet 'some unusual' expenditure and provision of a form of saving. The Central Banking Inquiry Committee recommended special legislation to regulate the activities of the Nidhis and Chit funds.

Co-operative Organizations: Mr. (later Sir) F. Nicholson was placed in 1892 on special duty by the Madras Government for the purpose of enquiring into the possibility of introducing into the Madras Presidency a system of agricultural or other land banks. He concluded that what was chiefly required for organised credit was 'small, local locally worked institutions on the lines of the European village institutions'; because they would satisfy the postulates of proximity, security, facility, excite local confidence and consequently draw in local capital, work cheaply, almost gratuitously and thus provide cheap credit, influence borrowers towards the true use of credit and watch the utilization of loans in accordance with contract, exercise educative influence in matters of thrift, association and self-help and develop high forms both of individual capacity, of public life and of national character. Co-operative organisation has taken a firm root in the land since 1904 although there is a great room for expansion and improvement.[1]

Government: To some extent the government also finances the needs of the agriculturists through *taccavi* loans. Loans are advanced under the Land improvement Loans Act 1883 and the Agriculturists' Loans Act 1884. Under the former *taccavi* is given for land improvements while loans are given for the purchase

1. See Chapter XII.

of agricultural necessaries such as seed, cattle and fodder. The rate of interest varies with the rate at which the government can borrow and repayment is arranged by instalments. The United Provinces (1934) and Madras (1935) amendments to the Act of 1884 extend its scope by permitting loans for the payment of existing debts and purchase of rights in agricultural land.

Taccavi loans have never been popular and the total finances provided by the government in this way have never been substantial. The Madras Committee on Co-operation (1939-40) found: 'The loans made under these Acts have been of help to the more substantial class of cultivators who can produce the necessary security, but they have left practically untouched the lowest strata of the agricultural community. In fact, the smallness of the amounts advanced by Governments when compared with the total finance required by agriculture has been due to the fact that the loans under the Agriculturists' Loans Act have mostly been advanced to enable the agriculturists to tide over emergencies and are not intended to supply his normal finance. Further, the system suffers from the serious defect that it does not carry with it any educative influence.'[1] The Punjab Banking Inquiry Committee drew attention to the petty exactions of the subordinate revenue staff, (which finally distributes *taccavi*) which add at least or 4 per cent to the rate of interest, to the delay that occurs in obtaining loans, and to the rigidity with which loans are realized. Even coercive processes are not in frequently applied in cases of default. The entire system requires a reorganisation. The Reserve Bank of India holds that Government machinery is not suited to serve as the source of normal finance to agriculture. On the other hand some economists suggest the opening of State Banks on the analogy of certain foreign countries.[2] Dr. Qureshi has advocated the formation of State Banks having branches in every *tehsil* with a banking department to provide production credit and a mortgage department to provide long-term credit on the security of land by issuing bonds and debentures. Such banks may be used by the Reserve Bank as its agents.[3] The Land Revenue Commission Bengal, which examined a proposal for establishing Government controlled agri-

1. Report p. 9.

2. Qureshi-State Banks for India.

3. Report of Proceedings of The Second Conference of the Indian Society of Agricultural Economics.

cultural Banks opined that it might operate as a check on the normal outlet of national finance while government management would be more expensive and the scheme would be financially impossible. The suggestion for State Banks however, should receive a more serious attention than has been given to it so far, for sooner the traditional form of money-lending is replaced the easier and quicker will be agricultural development in the country. Mr. Tardy in his report on agricultural credits has pointed out that in poor countries the governments had to take a hand in the provision of agricultural credit; they had either granted direct loans or set up State Banks.

Commercial Banks:—The Joint-stock banks in the country do not look upon agricultural finance as part of their business. They finance the agriculturists only indirectly to a small extent through intermediaries in so far as the merchants who give advances to small village dealers, have dealings with them. A few banks sometimes lend to landholders also. In fact, the ordinary commercial banks are not regarded as suitable agencies for normally providing agricultural credit even in the advanced countries of the West. The peculiarities of agricultural production, the special credit requirements of the cultivators for long periods coupled with the fact that banks hold most of their funds at call and usually grant loans for not more than three months, the lack of proximity between the ordinary bank and the agriculturist, and the absence of business accounts makes ordinary banks chary of dealing with the cultivator. The Central Banking Inquiry Committee recommended the establishment of commercial land mortgage banks on a joint-stock basis to meet the long-term requirements of the peasant proprietor who could give adequate mortgage security. As for the existing commercial banks the Committee did not think that they could play any considerable or useful part in regard to the smaller cultivators. The Reserve Bank however hopes that provided certain measures are undertaken commercial banks can play a greater part in financing the sale of agricultural produce. Such assistance can easily be extended only after the development of an open bill market in the country followed by a co-ordination of the commercial banks with the indigenous bankers, co-operative banks and money-lenders.

The Reserve Bank: The Agricultural Credit Department is an integral part of the Reserve Bank of India. Its statutory

functions are to study all questions of agricultural credit and to co-ordinate the operations of the Bank in connection with agricultural credit and its relations with provincial co-operative banks and any other banks or organisations engaged in the business of agricultural credit. So far the Reserve Bank has done little for providing organized agricultural credit in the country and may even be charged by having faltered in one of its obligations. It has of course not been lacking in giving advice or expressing opinions but mere lip-service does not achieve tangible results. It holds that it is impossible for it to lend to agriculturists direct or to advance large sums to co-operative banks or indigenous bankers for being lent out to cultivators as a matter of course. It rightly assumes the role of producing monetary conditions under which there will be adequate facilities for all those seeking credit for legitimate purposes. But the agriculturist knows that the establishment of the Reserve Bank has not so far affected his credit facilities.

Scheme for linking the indigenous bankers: The Bank formulated a draft scheme dated the 26th August 1937 for the direct linking of the indigenous bankers. It suggested that if the indigenous bankers were to come into practical relationship with the Bank and wish to be linked directly with it they must confine their business to banking proper, maintain proper books of account and have them audited by registered accountants, file with the Reserve Bank the periodical statement prescribed for scheduled banks and publish the returns, be subject to same conditions as the scheduled banks except that the compulsory deposit set out in section 42 of the Reserve Bank Act may not be made within the first five years, and develop the deposit side of banking activities. Under the scheme indigenous bankers with a capital of less than Rs. 2 lakhs were not entitled for direct linking with the Reserve Bank. The indigenous bankers registered with the Bank were to have the privilege of rediscount against eligible paper, the right to secure advances against Government paper, and remittance facilities similar to those for the scheduled banks. Generally speaking the indigenous bankers disagreed with the suggestions regarding the taking of deposits and giving due publicity to accounts and none were prepared to confine themselves to banking business only. They desired the scheme to be so modified as to be incompatible with the main proposals of the Reserve Bank. Consequently, the Bank has not found it possible as yet to recommend legislation for extending to

indigenous bankers the provisions of the Reserve Bank Act relating to scheduled banks.

In its statutory report the Reserve Bank also made it clear that unless the village money-lender is brought within the banking structure, it will not be able to influence or improve agricultural credit in an effective manner. At the same time it held the opinion that direct relations with the money-lender were not possible. The money-lender, according to the Reserve Bank can however, be brought within the banking structure if he develops his business through bills for advances to cultivators against produce. The bills of the approved money-lenders may be discounted by the scheduled banks and the Reserve Bank would be prepared to rediscount such bills at special rates by the grant of rebates to scheduled banks in respect of such paper. The Reserve Bank thus holds that the ultimate solution lies in the development of an open bill market in which first class bills are freely negotiated. But the creation of a bill market will take a long time, much examination and experiment and fresh legislative regulations. Need agricultural credit remain isolated, defective, unorganized and chaotic till then ?

Co-ordination with Co-operative Banks: While the Reserve Bank is not authorized to supply finance directly to the agriculturists, it can supply finance to the co-operative movement through the provincial co-operative banks. But the co-operative banks obtain their normal finance from deposits and the Reserve Bank does not act as the apex bank of the movement, it supplies finance only in times of emergency or seasonal stringency. 'Even in that case the funds advanced by the Reserve Bank are to be repaid within the time limit allowed by the Act and hence the provincial co-operative banks cannot make use of them for the purpose of continuing finance. Moreover, the Reserve Bank can deal only with those provincial co-operative banks which are run on approved banking lines'.[1] In its circular letter dated the 14th May, 1938 the Bank laid down that a provincial co-operative bank desirous of obtaining financial accommodation from it must maintain with the Bank cash balances the amount of which should not at the close of business on any day be less than 2½ per cent of the demand liabilities and 1 per cent of the time liabilities of such a bank in India and that it should submit to the Bank periodical statements prescribed

1. Functions and Working of the Reserve Bank of India (1941).

for the purpose. In another letter dated the 12th June 1939 it laid down the criteria of sound banking that the co-operative banks should, *inter alia,* maintain liquid resources consisting of cash, balances with bankers and Government securities, which should be at least 40 per cent of their demand liabilities. They should confine their business ordinarily to short-term loans.

Financial accommodation to the co-operative movement is available in the form of loans and advances against Government securities and approved debentures of recognized land-mortgage banks which are declared trustee securities and which the Bank considers readily marketable, for a period not exceeding ninety days to provincial co-operative banks and through them to central co-operative banks. The provincial co-operative banks can get further loans and advances for periods not exceeding ninety days against promissory notes of approved co-operative marketing or warehouse societies endorsed by provincial co-operative banks and drawn for the marketing of crops, on their own promissory notes secured by warehouse warrants or on the security of promissory notes supported by documents of title to goods. Re-discount facilities of promissory notes (of approved co-operative marketing or warehouse societies) maturing within nine months, bearing two good signatures and drawn in proper legal form so as to make them fully negotiable instruments, are also available to the provincial co-operative banks. So far the majority of these banks has not applied for any financial accommodation from the Reserve Bank.

The financial assistance to the land mortgage banks is still more restricted as the Reserve Bank of India is not authorized to make long-term loans. The Reserve Bank can help the land mortgage banks by buying their debentures or making loans against them. In this respect the Bank has laid down that it can deal in debentures provided they are guaranteed by Government both in respects of principal and interest, are declared trustee securities, and are readily marketable. The Co-operative Associations have demanded that the Reserve Bank should invest in the debentures of land mortgage banks and that provision should be made for enabling it to give long term rural credit. The Bank does not see eye to eye with the co-operative organisations in this respect. On the whole the utility of the Reserve Bank to the agriculturists in general including their co-operative organisations has been little.

Usury: One of the out-standing defects of credit supplied by money-lenders is the exorbitant rate of interests amounting sometimes even to usury. High rate and usury are however by no means synonymous, for there are borrowers, far too common in India, to whom it is possible to lend at a high rate only, if loss is to be avoided and the cost and trouble of the possible suit to be recovered.[1] Likewise, Mr. Darling observes that although usury is to be found everywhere, especially in the remoter tracts where there is little competition and the people are as ignorant as ever, properly considered, it is much less common than is popularly supposed, and with the march of time is becoming the exception rather than the rule.[2] There may be less of usury, yet the rates of interest are too high. The Central Banking Inquiry Committee reported that the rates of interest varied from 12 to 75 per cent in Assam, 12 to 25 per cent or even more in Bombay, 10 to 300 per cent in Bengal, 12 to 24 per cent in the Central Provinces and Berar, 12 to 24 per cent and occasionally rising to 36 or even 48 per cent in Madras, 6 to 12 per cent for secured loans in Punjab and 18 to 37 per cent for unsecured loans in the United Provinces. The Pathans and the Kabuli charge as much as 75 to 300 per cent in both the Punjab and the United Provinces. In Bihar and Orissa the rate for grain loans is 25 per cent in Oriya speaking districts and 50 per cent in the rest. An inquiry by R. F. Mudie about the cultivators' Debt in the Agra district in 1931 revealed that the average rate of interest for cultivators was 15·6 per cent for social loans and 22·2 per cent for agricultural loans in the Pargana of Agra. The highest ordinary rate was half an anna per rupee per month.

It is evident that the rates of interest, which the village money-lenders charged were high and even extortionate in some cases. At present the various provincial governments have taken measures to reduce and control these rates.[3] The Central Banking Inquiry Committee gave the following reasons for the high rates of interest prevalent in the country:—

(*a*) The assets of the farmer [illegible] land which all cannot offer as security are generally flimsy in the extreme. 'The money-lenders who lend money in

1. U. P. Banking Inquiry Committee Report p. 116.
2. The Punjab Peasant in Prosperity and Debt (third edition) p. 202-203.
3. See further p. 249.

these circumstances are taking a risk which other organized credit agencies do not take and they have, therefore, to protect themselves against loans by charging high rates of interest.'

(*b*) The money-lender holds a semi-monopolistic position as in many parts he is the only financing agency available to the agriculturists. Naturally, his rates of interest are high.

(*c*) The money-lender himself suffers from shortness of capital which factor inflates the rates under the operation of the ordinary laws of demand and supply.

(*d*) Illiteracy and conservative habits of the people are also responsible for the high rates of interest.

(*e*) The high expenses of collection and management of loans add to the gross rates of interest.

The Central Banking Inquiry Committee, inspite of the evidence that the high rates of interest are inherent in a system of private money-lending regarded the money-lender as an indispensable feature of Indian rural economy. This view is no longer tenable and ending rather than mending of the system, which our own experience shows tends to degenerate into a nuisance and has no where been included in the scheme of organised agricultural credit in the world outside, should be our motto. It is in this way that the rates of interest can be brought down to reasonable levels and credit be used for agricultural development.

Rural Indebtedness: Another evil associated with private money-lending is that of indebtedness. 'Indeed', says the Bombay Banking Inquiry Committee, 'The methods of the finance adopted by the *shaukar* are such that once a person gets into debt it is extremely difficult for him to get out of it.'[1]

Extent of Indebtedness: The Central Banking Inquiry Committee takes a figure of rupees 900 crores as a very rough estimate of the total rural indebtedness of India[2] distributed as follows:—

1. Report of the Bombay Banking Inquiry Committee p. 63.

2. Mr. Darling has drawn attention to the fact that the estimate is for British India only and for the country as a whole the total agricultural debt may be put at Rs. 1,000 crores— see the Punjab Peasant in Prosperity and Debt, p. 19.

Province.	Total Rural indebtedness.	Province.	Total Rural indebtedness.
Assam	Rs. 22 crores.	Central Provinces.	Rs. 36 crores.
Bengal	Rs. 100 „	Central Areas	Rs. 18 crores.
Bihar and Orissa	Rs. 155 „	Coorg.	Rs. 35-55 Lakhs.
Bombay	Rs. 81 „	Madras	Rs. 150 crores.
Burma	Rs. 50-60 „	Punjab	Rs. 135 crores.
		United Provinces	Rs. 124 crores.

The percentage of agriculturists free from debt varied from 9 per cent to 38 in Assam to 33 per cent to 60 per cent in the United Provinces. With regard to the nature of debt the U. P. Banking Inquiry Committee observed, that out of a total debt of Rs. 124 crores, seventy crores represented long-term investment in mortgages and of the remaining Rs. 54 crores, 20 per cent represented advances in kind. Seventy per cent of the total debt was classified as unproductive representing borrowings for subsistence, social or religious functions, litigation, and repayment of old debts or arrears of rent and revenue.

Indebtedness has increased considerably since the later half of the last century and in particular after the Great War. Mr. Darling points out with reference to Punjab—'Since the War there has been phenomenal increase in agricultural debt. For 1921, my estimate was 90 crores (75 for proprietors,) and for 1930, only nine years later, it is 140 crores. This is an increase of 56 per cent, and what makes it calamitous is the phenomenal fall in the price of agricultural produce—In 1921, a debt of 90 crores represented an average of Rs. 76 per head of the population supported by agriculture. For 1931, the corresponding figure (assuming a debt of 140 crores) is Rs. 104. Measured in commodities this sum is certainly twice as large as a sum of Rs. 76 ten years earlier.'[1] What applies to Punjab holds good equally about the other provinces. Since the estimate of the Central Banking Inquiry Committee was based on investigation in 1929, it is believed that during the Great Depression agricultural debt for British India alone might have exceeded Rs. 12,00 crores.[2] There is however another consideration, which points to the assumption that the rate of growth of indebtedness might have been slowed down during

1. *Ibid* p. 17.
2. P. J. Thomas, the problem of Rural Indebtedness, p. 19.

this period. The fall in prices obviously increased the distress of the cultivator and hence his necessity to borrow, but it equally increased defaults and thus greatly reduced the capacity of the money-lenders to lend. An official estimate about agricultural debt in the United Provinces in 1934 puts it at Rs. 101 crores only pointing to a fall. The evidence collected in Madras in the same year by Mr. Sathianathan however showed an increase in the agricultural debt of that province from Rs. 150 crores (the estimate of the Banking Committee) to Rs. 210 crores. In any case the subsequent debt legislation in the provinces has reduced the amount of indebtedness if not its real burden. It may therefore be taken as a very rough estimate that at the out-break of the present war rural indebtedness had been reduced to its extent 10 years before.

Rural Indebtedness and War: The rise in the prices of the agricultural commodities since 1942 turned the balance in favour of the agriculturist and the debtors. It increased their repaying capacity but only with reference to the marketable surpluses of their produce, which in the cases of the tenants and the smaller peasants are very small. But the farmers having larger holdings have been provided with an opportunity to consolidate their positions. There is no direct evidence to suggest that they have made use of it to any great extent. In the case of the large land holders having transferable rights the opportunity has been still greater due to the rise in land values. Evidence is also forthcoming that perhaps by the end of the war a substantial portion of their debt s would be cleared out. The following figures of the working of the Madras Central Land Mortgage Bank are significant in revealing the situation in this respects:—

Amount in lakhs of rupees.

Year.	Disbursed to primary banks.	Advance collections.
1936-37	39·18	1·87
1937-38	35·79	3·45
1938-39	58·53	4·44
1939-40	42·82	5·29
1940-41	40·77	8·58
1941-42	40·32	12·12
1942-43	23·65	24·44

Similarly the figures of the Bombay Provincial Land Mortgage Bank disclosed that in 1942-43 the Bank received a sum of Rs. 2,44,058 in excess of the amount due for repayment. There can be little doubt that the land owners have been able to repay their debts during the present war-time boom in prices and many of them have seized this opportunity. But there is no information about the respective role being played by the sale of assets and increase in incomes in the liquidation of debts.

Causes of Indebtedness:—Nicholson summarised[1] the causes of agricultural indebtedness as: (1) poverty with unproductive soil, precarious climate, and irregularity of income, (2) ignorance and improvidence, (3) extravagance, (4) ancestral debt (5) expansion of credit, (6) increase of population without corresponding increase of return, (7) facilities of borrowing owing to the influence of money-lenders, (8) the limitation laws, as leading to renewals on usurious terms including compound interest and (9) revenue system of a fixed demand. The Provincial Banking Inquiry Committees made detailed investigations into the causes of rural indebtedness and their conclusions tally in the main with Nicholson. To illustrate, the U. P. Banking Inquiry Committee reports that the most common objects of borrowing are:—

(*a*) The purchase of seed, cattle and the payment of wages.

(*b*) The purchase of food, cloth and other domestic necessities.

(*c*) The payment of land revenue or rent.

(*d*) The financing of some social or religious function or ceremony.

It goes on to point out that of the total debt, 30 per cent is due to the needs of the cultivator's industry, 34 per cent is due directly and definitely to his poverty, hence unavoidable, and 36 per cent is due to the social, religious or legal customs by which he is bound.

Poverty:—Obviously, therefore, poverty and all those factors, economic or social, that cause it provide the breeding ground for indebtedness. The fact that the cultivator has a deficit budget even when he curtails his requirements to the barest minimum, as

1, From the report of the Deccan Commission of 1875.

he ordinarily does, stands behind most of the purposes for which he borrows. The excessive pressure of population on the soil and the lack of alternative means of employment due to either the decline of cottage industries or the slow growth of large-scale industries, compel the cultivators to live perpetually in an unbalanced economy supported by borrowings. The acute sub-division and fragmentation of holdings that reflects the economic situation in the country brings in its train a mass of unavoidable debt.[1]

Prosperity:—Whereas poverty compels one to borrow, prosperity facilitates it. In the United Provinces 'whilst relatively fewer landlords are free from debt than tenants and peasant proprietors, the average debt of the former is nearly 24 times as large as that of the latter.' (Banking Inquiry Committee). Mr. Darling has found in Punjab that if prosperity has increased, so also has debt, for, with prosperity the necessity to borrow may be less, but the opportunity is greater, and 'wants' are as much dictated by the one as the other.' The rise in agricultural prices and land values has caused a great expansion of credit, which could not but demoralize an uneducated and illiterate peasantry and eventually add to the burden of its unproductive debts.

Nature of occupation:—It has already been pointed out that farming in india is very precarious depending absolutely on the monsoon, which 'has all the proveribal caprice of the Eastern potentate'. (Darling) The insecurity of crops aggravates the poverty of the cultivator, the irregularity of his income encourages extravagance while failures of rain add to his distress. All these factors conspire to compel him to borrow. The constantly recurring losses of cattle from drought and disease, with no depreciation fund to draw upon cause frequent loans. Insurance of cattle and harvest is conspicuously lacking.

Improvidence and extravagance:—Some of the Provincial Banking Inquiry Committees have attributed a part of indebtedness to the extravagant expenditure on social ceremonies and improvidence of the ryot. But the picture of extravagance has often been overdrawn. The Deccan Riots Commission (1875) has aptly

1. The U. P. Banking Inquiry Committee has calculated that 56% of the cultivators possess holdings either at or below the minimum economic figures, of whom 26 per cent must obviously have some difficulty to keep their heads above water. Report p. 99.

pointed out. 'The constantly recurring small items of debt for food and other necessaries, for seed, for bullocks, for the government assessment, do more to swell the indebtedness of the ryot than an occasional marriage.' Yet, none will deny that expenditure on social ceremonies, which of late has even been rising, does result in indebtedness in many cases. Purchase of land at heavy prices and speculative trading are not unoften the objects of loans and illustrate the improvidence of the cultivator. There is room for providence and economy in his consumption, which if filled may result in the avoidance of a number of loans. Similarly, his excessive love of litigation is sometimes a cause of his financial embarrasment. Mr. Calvert found in 1922 that in Punjab alone 2·5 million persons (*i.e.* about 20 per cent of the adult male population) attended the courts from year to year wasting 3 or 4 crores of rupees in the process.[1]

Ancestral Debt. Past indebtedness, which is very often inherited in the country is a chronic cause of borrowings. The force of tradition and the ignorance of law cause debt to pass from generation to generation, whose burden ever goes on rising due to the high rates of interest and the system of money-lending. The Royal Commission on Agriculture and the Central Banking Inquiry Committee, both recommended the enactment of a simple insolvency Act to terminate 'a system under which innumerable people are born in debt, live in debt and die in debt, passing on their burden to those who follow.'[2] The recommendation has not yet received the attention it needs, although some of the provincial governments have passed legislation for scaling down debts.

Money-lender and system of money-lending:—We have already examined the system under which the cultivator in India is enabled to incur vast sums of unproductive debts, which due to the high rates of interest and the many objectionable practices which the money-lenders adopt always remain outstanding. The system of credit based on uncontrolled individual money-lending is demoralizing to the extreme and contains within itself the ingradients which facilitate and even compel those for whom it exists, to live in perpetual indebtedness and bondage.

1. The Wealth and Welfare of the Punjab, 1922, p. 206.
2. Agricultural Commission Report.

Land-Revenue and Rent: The rigidity with which land revenue is realized and the heaviness of its burden in the temporarily settled areas is said to be one of the causes of indebtedness. According to the investigations of the U. P. Banking Inquiry Committee ten per cent of the total agricultural debt in the province had been contracted for the payment of rent and revenue. It is certainly true that the peasant proprietors as well as tenants, cultivating uneconomic holdings, often borrow to pay the land charges. Mr. Darling has taken great pains to prove that land revenue is not a primary cause of debt and yet he admits that it is often an occasion of borrowing. After the fall in agricultural prices his own evidence showed him that 'it presses seriously upon resources and has led to much more borrowing than usual'.[1] Let aside the question whether the burden of rent and revenue is so high as to cause indebtedness, there is ample evidence to prove that many cultivators are obliged to borrow to discharge their obligations in this respect.

Evil effects of Indebtedness:—One of the obvious consequences of indebtedness is the transfer of land from the agricultural class to the non-agricultural money-lender making the peasant proprietor a landless proletariat with a greatly reduced agricultural efficiency. The standard of farming is lowered and agricultural yield suffers reducing the national dividend to the same extent. Crop-cutting experiments in Bihar Orissa and Bombay confirm the loss of agricultural efficiency in the process. The opinion of the various Provincial Banking Inquiry Committees differed on the point. For instance, the U. P. Committee reported that transfers were partly to the agriculturists and partly to the non-agriculturists. 'So far as', it reported further, 'the transfers have been to agriculturist purchasers, the change was almost certainly for the better. So far as the transfers were to non-agriculturist purchasers the change was not necessarily for the worse'[2] They admitted the need for a further and fuller inquiry into the matter. On the other hand the evil was said to be very serious in Bengal where it was pointed out the money-lenders were usually non-agriculturists. In any case it is quite easy to understand that the transfers of the land of the cultivators to the rentiers have adverse economic consequences for the community as a whole. As far as transfers of lands of the rentier land-lords are concerned, they are certainly for the better.

1. *Ibid* p. 233.
2. Report p. 128.

Again, 'the cultivator feels so depressed by his burden of debt and he is unwilling to bestir himself to adopt new methods as he will gain no advantage therefrom'[1] There is certainly a truth in the assertion and the cultivator, a substantial portion of whose income is taken away in the repayment of outstanding unproductive debts has little margin for efficient cultivation.

Finally, indebtedness compels a cultivator to sell his produce to his creditor at very unfavourable rates. The money-lender's grip over the cultivator, not to mention the economic servitude, which it causes, results in a lowering of the income of the agricultural debtor on the one hand and a rise in his expenses on the other.

Debt Conciliation:—The Central Banking Inquiry Committee recommended to the provincial governments the pursuit of a vigorous policy of debt conciliation on a voluntary basis. Debt conciliation Acts have been passed since then in a number of provinces including the C. P. Punjab, Bengal, Assam, and also in some of the Native States.[2] The Central Provinces was the first to take the lead in 1933 and although legislation in the different provinces differs, the essential features are more or less common. Under the conciliation Acts, the Conciliation Boards try to bring about an amicable settlement of debts between the debtors and the creditors. A mild pressure is exercised on the creditors by the issue of certificates, 'where the debtor has made the creditor a fair offer which he ought reasonably to accept.' The effect of the issue of a certificate on the non-agreeing creditor is that the court disallows costs of the suit and interest above a maximum rate. According to the Bengal Agricultural Debtors' Act of 1936 the Conciliation Board may in certain cases even pass an order settling the amount of debt inspite of disagreement of the creditor to such a settlement. In the C. P. the creditors usually join in the amicable settlements in their own interest as the settled debt becomes the first charge on the whole property of the debtor and they are given the facility to realize the instalment amounts through the revenue officers. But such facilities are not given in all the provinces.

1. Report by Sir John Russell Op. Cit.

2. For a detailed study see Legislative Protection and Relief of Agriculturist Debtors in India by K. G. Sivaswamy.

Constitution of the Conciliation Boards:—For conciliation, it is necessary that the machinery should be such as to wield influence and carry weight with the creditors. In the Central Provinces and the Punjab these boards consist of not less than 3 members and not more than 9 members. Revenue officers of ripe experience are appointed as Chairmen of these boards, while the other members are non-officials representing both the debtors and the creditors. In Bengal there are the village boards consisting of 5 members, all nominated by the Collector of whom 2 represent the creditors and 2 the debtors. The conciliation machinery in Assam is a board of which formerly sub-deputy Collectors used to be the Chairmen.

The working of Conciliation Boards:—Substantial success has been achieved in the Central Provinces, the Punjab and to some extent in Bengal. In Madras, only six Boards were constituted in some districts but they did not succeed in giving any tangible relief to the indebted agriculturists. In Bengal too, the Boards are experiencing difficulties largely due to the amount of corruption and inefficiency in the working of the village Boards. The judges of the High Court observed: 'The personnel of the ordinary Debt Settlement Board consist mostly of persons whose literary attainments do not go beyond ability to sign their own names.' Their working is further characterized by long delays and defective administration. The Punjab Debt Conciliation Boards have met with a fair amount of success having reduced the debts on settlement by seven annas in the rupee at an average and by 23 per cent in case of secured debts. The Debt Conciliation Boards in the Central Provinces conciliated by November 1939 debts amounting to Rs. 1,178·83 lakhs for Rs. 586·23 lakhs. Certificates were granted for roughly 20 per cent of the debts. These Boards stopped working after the establishment of the Debt Relief Courts under the provisions of the C. P. Relief of Indebtedness Act 1939.

Recovery of the Conciliated Debt:—One of the outstanding difficulties in the way of conciliation in several provinces has been the lack of provision for the immediate payment of the conciliated debt. The creditors have been more willing to come to an agreement when they find that the conciliated debt has a chance of immediate repayment either in cash or by absolute transfer of tangible assets of the debtor. For example, it has been observed in the

Punjab 'that the success of a Board depends largely on the extent to which it can settle debts by the transfer of some tangible assets, as this avoids payment by instalments, which is most uncertain because it gives the creditor no special remedy in the case of default'[1] The success of conciliation in the Central Provinces can largely be attributed to the vigorous provisions for recoveries. According to the C. P. Debt Conciliation Act if a debtor defaults in paying the due instalment of a settled debt, the arrears are realizable as arrears of land revenue. The work of conciliation would have achieved significant success in all the provinces had there been some provision for cash payments or settlement through government bonds. The development of land mortgage banks and the issue of state bonds therefore, play an important role in easy liquidation of indebtedness.

Compulsion:—Conciliation however is a dilatory process and it takes a long time to bring about a voluntary agreement. Considering the acuteness of the problem of indebtedness and the fact that creditors sometimes presented a strong front against settlements the provinces in their more recent debt legislations have included provisions for compulsory scaling-down of debts. We may now review the main legislative measures taken in this respect in some of the important provinces.

Debt Legislation in the United Provinces:—The U. P. Legislative Council passed no less than five Debt Acts in the year 1934. The most comprehensive among these was the U. P. Agriculturists' Relief Act 1934, which came into force on 30th April 1935. Ordinarily it was intended to give relief from indebtedness to agriculturists whose total rent and revenue did not exceed Rs. 1,000. It made provision for the fixation of instalments in decrees and for the reduction of the future interest on these to the notified rate, which has been 3¼ per cent. It provided for the redemption of property under usufructuary mortgages not later than 20 years from the date of a mortgage by a simple application for redemption. The rents and profits of agricultural property prior to the enactment of this Act were taken by the creditors to pay off interest alone. The new legislation however provided that the mortgage debt shall be deemed to have been discharged by the usufruct of the property within 20 years. Notwithstanding anything in any contract to the

1. Report of the Land Revenue Commission, Bengal. Vol. II p. 55.

contrary no debtor according to this Act is liable to pay a higher than the specified rate of interest, which varied according to the amount of loan and the fact whether it was secured or not. On secured loans the minimum specified rate was 6½ per cent simple interest on sums exceeding Rs. 20,000 while the maximum was 9½ per cent for amounts below Rs. 500. The respective figures for unsecured loans were 9 per cent and 14 per cent. Agriculturist debtors were also authorized to file a suit for accounting against their creditors, who were required to maintain and furnish regular accounts. The second legislation was the Usurious Loans (United Provinces Amendment) Act 1934, which although on the statute book since 1918 had remained a dead letter for practical purposes as it did not specify any level of interest above which any rate of interest was to be regarded as excessive. This amendment remedied this defect by laying down that a rate exceeding 12 per cent on secured loans and 24 per cent on unsecured loans would be deemed as excessive. By the U. P. Temporary Regulation of Execution Act 1934 the amount of the decrees not exceeding Rs. 1,000 against petty agriculturists was reduced to the extent of 35 per cent in case the rate of interest exceeded 24 per cent and to the extent of 25 per cent in all other cases. The reduced amount was to be paid in annual instalments not exceeding five in number. The sale of agricultural land in execution of civil court decrees against agriculturists was regulated by the U. P. Regulation of Sales Act 1934. The creditors were bound to accept landed property in discharge of their loans not at market prices as hitherto, which had been greatly reduced due to the slump, but at a valuation made by the Collector at the pre-Depression level. The U. P. Encumbered Estates Act 1934 was passed with the object of an early liquidation of the indebtedness of the landlords through instalments or transfer of minimum land as far as possible. Special judges were appointed and indebted landowners were required to apply within one year from the 30th of April 1935 for relief under the Act. The Special judges were to go through accounts of a debtor upto 31st December 1916 and find out the original amount of the principal and then apply the rule of *damduput* for determining the amount due from him. This amount was to be realized by first selling the debtor's moveable and immoveable non-agricultural property and the balance by grant of a self-liquidating mortgage, issue of bonds by the Government or the transfer of unprotected land at a pre-

slump valuation to the creditors. Whenever bonds are issued by the government to the creditors the debtor is liable to pay to it the full amount in instalments together with interest which the bonds bear. The payment by the State of the amount of the bonds does not however in any way depend on the recovery of these instalments. 34,000 applications involving a sum of Rs. 25½ crores were filed under the Act.

The U. P. Debt Redemption Act of 1940, which came into force on 1st January 1941 reduces agricultural debts still further. It is stated that the Acts, which came into force in 1935 failed to reduce debt to a level which would enable any measures which may be passed to put agricultural credit on a sound basis in future to be effective. Debt is reduced under the new Act by applying a low rate of interest, which is 4½ per cent simple in the case of secured debts and 6 per cent simple in the case of unsecured debts. In addition, the rule of *damduput* also applies to unpaid interest. A portion of debtor's land, the local rate on which does not exceed Rs. 12-8-0 in the permanently settled areas and Rs. 25 elsewhere is altogether protected from sale or transfer in execution of a decree for debt although a self-liquidating mortgage for a period not exceeding 20 years may be created over it for the recovery of a debt. Only one-third of the agricultural produce is now liable to attachment at any one time. Unprotected land is to be transferred at a valuation made by the Collector. This Act applies to loans incurred before 1st June 1940 and later transactions are governed by the U. P. Regulation of Agricultural Credit Act 1940.

Legislation in several other provinces for the compulsory scaling down of debts has been based more or less on these very principles and hence it need not be examined in detail.

Debt Legislation in Madras: The Madras Debtors' Protection Act, 1935 was the first legislative enactment in this province intended for the protection of small debtors, whose loans did not exceed Rs. 500. It proved inadequate not only because it was not devised specially for the solution of the agricultural problem but also because it simply prescribed maximum rates of interest and required creditors to maintain proper accounts. The Madras Agriculturists' Relief Act 1938 however, is based on a recognition of the acuteness of the problem of rural indebtedness and incorporates the

principle of compulsory scaling down of agricultural debts as distinct from voluntary settlement. On the pre-depression debts *i.e.* loans incurred prior to October 1932 all interest outstanding on 1st October 1937 has been wiped out, whereas a maximum interest rate of 5 per cent up to October 1937 has been laid down for loans taken after 1st October 1932. The rule of *damduput* is to be enforced not only with reference to the unpaid interest as in the United Provinces but if the payment on account of principal or interest or both is twice the amount of the original principal, the whole amount shall be deemed to have been discharged and if the payment is less than double the principal, only the balance shall be paid. The future rate of interest on debts scaled down under the provisions of the Act has been limited to 6¼ per cent. All arrears of rent due to *zamindars* and other land-holders have also been written off. According to a press communique of November 1941 more than 168,000 cases had been disposed off by September 1941 reducing debts of Rs. 6·52 crores to Rs. 3·46 crores.

The Bombay Agricultural Debtors Relief Act 1939: It came into force in 1941 as an experimental measure in a few *talukas*. It applies to agriculturists whose loans did not exceed Rs. 15,000 on 1st January 1939. The relief on the basis of compulsory scaling down of debts is to be administered through specially constituted Debt Adjustment Boards. Reduction is made both in respect of principal and interest on the following scale:—

		Commencement of Loans		
		prior to January 1930.	1930.	After 1st January 1931.
(*a*)	Maximum rate of interest.	12 per cent.	12 per cent.	9 per cent.
(*b*)	Reduction in the amount found due up to 1st January 1931.	40 per cent.	30 per cent.	....

The rule of *damduput* also applies. After the debts have been scaled down at the above mentioned rates the Boards reduce the debts further to 80 per cent of the repaying capacity of a debtor. The amount so adjusted is paid to the creditors in the form of bonds issued to them by the Provincial Land-Mortgage

Bank, provided they agree to a further reduction of their claims to 50 per cent of the debtor's assets. Barring such an agreement instalments are granted not exceeding 25 in number for the repayment of the scaled-down debts.

The C. P. Debt Legislation: Apart from the Conciliation Act of 1933 the Government realized the necessity for the compulsory reduction of the principal and interest charges. The Usurious Loans (C. P. Amendment) Act 1934, the C. P. Reduction of Interest Act 1936, and the Central Provinces and Berar Relief of Indebtedness Act 1939, are all based on the recognition of this need. Under the last mentioned Act, Debt Relief Courts have been established which reduce the principal and the rate of interest at the following scale:—

Reduction in the Principal

Date of loan.	percentage of reduction.
Prior to 31st December 1925.	30
31st December 1925 to 31st December '29.	20
31st December '29 to 31st December '31,	15
After 31st. December 1931.	....

Compound interest with yearly rests has been limited to 5 per cent and simple interest to 7 per cent for secured debts and 10 per cent for unsecured debts. The Act provides for transfer of land in lieu of debt.

The Punjab:—This province took an early lead in the matter of tackling the problem of indebtedness by first passing the Punjab Alienation of Land Act 1901, and then the Redemption of Mortgages Act 1913, and the Punjab Relief of Indebtedness Act, 1934. This later Act amends the Provincial Insolvency Act of 1920 the Usurious Loans Act 1918 and the Redemption of Mortgages Act. The Debtors' Protection Act 1936 afforded immunity to certain kinds of properties and finally, the Punjab Restitution of Mortgages of Land Act, 1938, made provision for the restoration to the debtor of agricultural land mortgaged prior to 8th June 1901. The principle of *damduput* is enforced under this Act. It already applied to unsecured loans under the Punjab Relief of Indebtedness Act, 1934.

To sum up, earlier debt legislation undertaken in 1934 and after, in practically all the provinces was in the nature of emer-

gency measures to deal with the Depression. Attempt was made to adjust indebtedness on the basis of the fall in prices. The right course of adjusting indebtedness to the repaying capacity of the debtor has not yet been fully adopted in any province although debt legislation of 1939 and after in several provinces partially recognises the principle. Tenants and petty cultivators have received much less protection and relief than the land owners although their problem was more acute. The necessity therefore of a simple rural Insolvency Act administered by tribunals on the spot cannot be overemphasised. The Royal Commission on Agriculture put the case very clearly when they said, 'Just as creditors have a right to insist that all debtor's assets should be impounded and applied towards the payment of the debts, so also a debtor who has given up all his assets should have the clear right to be allowed to earn his living if he can, and to be free to make a new start in life.' The Central Banking Inquiry Committee and the Reserve Bank have also emphatically recommended enactment of rural insolvency law.

But what lasting good will follow even if we wipe out all agricultural indebtedness by a piece of legislation rather than by an increase in the real earnings of the agriculturists? They may certainly make a new start in life—but where? On the road of bankruptcy again! The case is summed up in the following words by the Reserve Bank, 'Where, however there is chronic indebtedness and debts accumulate because the cultivator's income is not sufficient to leave him a reasonable margin of profit, the mere scaling down of debts cannot provide a permanent cure. Even a limitation on the rate of interest which can be charged by the money-lender (if it could be enforced) is not likely to do much good as the rate of interest is not the only cause of the cultivator's inability to repay. Such chronic indebtedness requires a comprehensive policy aimed at improving the whole life and economic status of the agriculturist.'[1]

Restriction on Land Alienation: The policy of preventing the easy transfer of land was adopted in the Punjab, the C. P., and the United Provinces to retain land in the hands of the agriculturists. The Punjab Land Alienation Act 1900[2] has a general application while the C. P. Act applies only to members of the

1. Statutory Report p. 12.
2. According to this Act the chief hereditary cultivating classes have been notified and grouped by districts.
Alienations by members of the notified tribes outside their group are restricted.

aborginal tribes and similarly the U. P. (Bundelkhand) Land Alienation Act 1903, has a limited application. In the opinions of the Banking Inquiry Committees the effect of such legislation has not been wholesome. It was reported from Punjab that the Act 'hampers the operations of the non-agriculturist rural money-lender and gives the agriculturist money-lender a predominant interest in usufructuary mortgage business of the province.... The rates of the non-agriculturist money-lender are enhanced and his loans are restricted, while the agricultural money-lender, who is also a big landlord, is taking advantage of the Act to add to his land at the expense of the peasantry.' As a matter of fact there is nothing to choose between the agriculturist money-lender and his professional rival; 'the one is as harsh as the other is astute, and both are demoralized by the system under which they work'. The Act was amended in 1938 to deal with the agriculturist money-lenders. It provides that no sale of land by an agriculturist shall be made in favour of a creditor. This may increase the number of *benami* transactions still further. Moreover, restrictions on transfer of land keep the townsman away and thus deprive agriculture from a useful assistance. The experience in the United Provinces was no better. The non-agricultural money-lender was replaced by the agricultural money-lender with the result that the richer landlord increased their possessions at the expense of the poorer. The tenants hardly received any benefit. Supply of credit was reduced, rates of interest increased while there was a fall in land values. In the Central Provinces the Act applies to the *Gonds* only and in the opinion of the C. P. Banking Inquiry Committee the restrictions imposed by the Act operate to perpetuate the backwardness of this class of the population. The Central Banking Inquiry Committee was of opinion that, 'from a purely banking point of view, it is necessary that steps should be taken to remove all impediments to the free transfer of land.' But the banking point of view is not the only one. If the question is judged in view of the welfare of the agricultural community the proper solution would perhaps lie in protecting the land of the peasant proprietors cultivating their holding themselves. As such there should be no restrictions on the transfer of land let to the tenants, but on the same principle all *khudkast* and sir land should be declared inalienable except in favour of a co-operative land mortgage bank in discharge of such loans as are taken for productive purposes.

Regulation of money-lending: Usury. With a view to remedy the evils of money-lending the Government has been trying various measures of control. The earliest of these related to the control of usury and prior to 1855, the various regulations fixed the maximum rate of interest at 12 per cent. These were however repealed simultaneously with the repeal of usury laws in England in 1855. Later on, the recommendations of the Commission of 1891 appointed to inquire into the working of the Deccan Agriculturists Relief Act resulted in an amendment of the Contract Act in 1899 declaring certain transactions void. This could not protect the ignorant debtor. The Usurious Loans Act, 1918, based on the English Money-Lenders' Act 1900 permitted re-opening of transactions if the rate of interest was excessive. But the Courts seldom exercised their discretion under the Act. The Banking Inquiry Committees therefore recommended that the usurious rates should be defined. The various provinces have now amended the Usurious Loans Act to define rates of interest which should be considered as excessive.

Regulation of Accounts: The Royal Commission on Agriculture recommended the enactment of an Act for the purpose on the lines of the British Money-Lenders' Act, 1927. The Conference of the representatives of Local Governments convened by the Government of India 1934 to consider the matter decided that the regulation of money-lending be left to the Provincial Governments. Punjab has already led the way in 1930 by enacting the Punjab Regulation of Accounts Act 1930. The other provinces followed soon; Bengal in 1933, Bombay, the C. P., the United Provinces, Assam and Madras in 1934, Bihar in 1938, and Orissa in 1939. These Acts provide that creditors shall maintain regular accounts showing the principal and interest separately and furnish to each debtor periodically a copy of accounts. The issue of receipts for repayments is obligatory and in some provinces a copy of loan document has also to be supplied to the debtor. Penalties for non-compliance with the provisions are in most cases the cancellation of interest and costs for not writing accounts in the prescribed form. In Bihar and Orissa the penalty extends to even imprisonment for one year and fine. Actual working of the provisions however shows that the sections relating to maintenance of account have been usually evaded. Without periodical inspection and audit

such measures are liable to be neutralized by the compelling necessities of the debtor.

Registration and Licensing of Money-Lenders: To make regulation of money-lending effective registration and licensing of money-lenders has been advocated and recent debt legislation in some provinces has incorporated the principle. The C. P. Money-lenders' Amendment Act, 1936 was the first to enforce registration of money-lenders. Registration is now necessary in the Central Provinces, Bihar, Punjab, Bengal and Bombay. Various provisions have been made to encourage registration including in some provinces the declaration of the business of an unlicensed money-lender a penal offence.

Fixation of maximum rates of interest: Maximum rates of interest, which the money-lenders can charge have been prescribed in a number of provinces. These are mostly subject to the principle of *damduput*. These rates differ in different provinces and require to be standardized. The best plan is perhaps that adopted in the United Provinces, where the maxima rates have been linked with the rates at which the Government of India will lend money to the Local Government and thus will fluctuate according to conditions in the money-market from time to time. The U. P. system of the fixation of rates is commendable from another point as well, *viz*, the maximum rates differ according to the amount and nature of loan. The following is the relevant schedule:—

Maximum rates of Interest in the United Provinces.

Amount of Loan	Secured loans		Unsecured loans	
	Compound yearly rests	Simple	Compound yearly rests	Simple
Rs. 500 and under	x + 3	x + 5½	x + 7½	x + 10½
Rs. 501 to Rs. 5,000	x + 2½	x + 4½	x + 6	x + 8
Rs. 5,001 to Rs. 20,000	x + 2	x + 3½	x + 4½	x + 6½
over Rs. 20,000	x + 1½	x + 2½	x + 3½	x + 5

X in this schedule represents the rates at which the Local Government borrows from the Government of India.

In Madras the maximum rate has been limited to 6¼ per cent simple interest for all loans. Compound interest is prohibited in Bombay, Bihar, Orissa, Assam and Madras. The maximum rate in Bombay, Bihar, and Orisa is 9 per cent for secured loans and 12 per cent for unsecured ones. For Assam the respective rates are 12½ per cent and 8¾ per cent. The maximum rate of simple interest for secured loans is 7 per cent in the C. P., 12 per cent in the Punjab and 15 per cent in Bengal. The figures for compound interest are 5%, 9% and 10%, respectively. In case of unsecured loans Bengal allows a maximum of 25% per annum simple interest and 10 per cent compound interest. The respective rates in Punjab are 18 per cent and 14 per cent and in the Central Provinces 10% and 5 per cent. A serious defect of this type of control is that it is very difficult to enforce and false entries adding arbitrary amounts which are never lent, are made by many creditors at the time of making advances. A system of organised agricultural credit alone can be successful in tackling the problem.

Miscellaneous Provisions: Provisions have also been made in the provincial Acts for the prohibition of illegitimate charges and protection of debtor against molestation and intimidation. Some Acts give debtors the right to sue for Accounts. In some cases the power of arrest and detention of debtors in the civil prison has been taken away from the creditors as it was often misused.

In certain respects the U. P. Regulation of Agricultural Credit Act, 1940 is more advanced than similar legislation in other provinces. It gives due recognition to the necessity of restricting the amount that can be borrowed on the security of land. It provides that the land of petty proprietors paying not more than Rs. 250 as land revenue cannot be sold in execution of a decree for debt unless the debtor has other sufficient means of livelihood. All that the creditor can obtain is a self-extinguishing usufructuary mortgage for 20 years. Such land cannot be permanently transferred without the sanction of the revenue authorities. Similarly in the case of cultivators a decree cannot be executed against agricultural produce after six years and not more than one-third of a crop can be attached at any one time. The supply of credit may thus be limited to the repaying capacity of the borrower.

Effect on the supply of Credit: The most general effect of the debt legislations has been a shrinkage in the supply of rural credit.

In so far as improvidence and extravagance of the agriculturist compelled him to borrow, this curtailment has been for good, because the cultivator has been obliged to be more judicious in his consumption than before. But where indebtedness was caused due to a deficit economy in the present day agriculture in the country, the agriculturist might have been obliged to reduce his very low standard of living still further or pay a higher cost for credit in the black market. It is perphaps the compelling necessity for borrowing for unproductive and yet unavoidable purposes that has created the black markets for agricultural credit in the country and which has largely been responsible for facilitating the evasion of laws by the creditors. For the present it may be true to hold that the general shrinkage of rural credit has not adversely effected agricultural progress. But, if and when considerably large amounts are required for agricultural improvement and better farming the present supply of credit may prove hopelessly inadequate. Its shortness may even impede agricultural reorganisation. Private money-lending, regulated or unregulated, will utterly fail to satisfy the needs of reconstruction of the agricultural industry. Let us then make a vigorous effort from now on to construct that system of agricultural credit, which may be able to discharge its true functions of enabling the industry to run on a high level of efficiency. In such a scheme of organised credit the private money-lender can have little room.

CHAPTER XII.

Co-operative Action.

Co-operation.—Co-operative organisation and the activities which it embraces have so rich a variety of forms that it is not always easy to dogmatize about its contributions. Standing almost mid-way between capitalism and communism it implies moral bonds of solidarity and equality between members, co-ordination of individual activity in joint effort, free democratic control of management and a non-profit making enterprise. A Co-operative Society has been defined as 'an association of the economically weak who, voluntarily associating on the basis of equal rights and equal responsibility, transfer to an undertaking one or several of their economic functions corresponding to one or several of the economic needs which are common to them all but which each of them is unable fully to satisfy by his own individual efforts, and manage and use such undertaking in mutual collaboration to their common material and moral advantage'[1].

There is not any one form of co-operative organisation. The rural credit societies in India resemble the Raffeisen Banks constituted on the principles of (*i*) limitation of area, so as to secure mutual personal knowledge on the part of members. (*ii*) nominal share capital, (*iii*) permanent inalienable reserve fund; (*iv*) unlimited liability; (*v*) little or no dividends; (*vi*) democratic and honorary management; (*vii*) credit to members only with facilities for repayments by instalments spread over long periods; and (*viii*) promotion of moral as well as material advancement of the members. On the other hand, the urban co-operative credit societies are based on the models of Schulze-Delitzsch Banks, whose main features are (*i*) a relatively wider area, (*ii*) substantial share capital, (*iii*) limited liabilities, (*iv*) high dividends, (*v*) reserve which is not indivisible and is built by carrying a portion of profits, (*vi*) short-term loans, (*vii*) pure banking business only, (*viii*) paid officers, who form the Board of Management, and (*ix*) little attention to the general social welfare of the members.

Genesis of the Movement.—It has already been pointed out as to how early interest of the government of Madras in the pro-

1. League of Nations' Survey on 'Co-operative Action in Rural life' (1939), p. 5.

blem of rural indebtedness led to an inquiry by Mr. (later Sir) Frederick Nicholson, who recommended the establishment of small and locally worked institutions on the lines of European village banks of Raiffeisen type. These recommendations came to the notice of the Government of India in 1900. A similar recommendation had been made by Mr. Dupernex for the United Provinces. These recommendations were endorsed by the Indian Famine commission 1901. The Government of India felt the necessity for special legislation for the purpose and on the basis of recommendations of a committee presided over by Sir Edward Law, the co-operative Credit Societies Act X of 1904 was passed. The main object of the Act was to facilitate the development of the co-operative movement in the country; but unlike the countries of its origin in Europe the movement became Government sponsored from its inception, a feature which has deprived it of its free appeal.

The Act of 1904 did not provide for the registration of non-credit societies and confined their membership wholly to individual persons. These defects were remedied by the Co-operative Societies Act (II of 1912), which made provision for all types of Co-operative Societies including Central financing and supervising banks and Unions. The agricultural primary credit societies were to be registered with unlimited liability, while central societies were to have limited liability. In the case of other societies the members were free to choose the basis of their liability at the time of registration.

Maclagan Committee on Co-operation.—The Government of India appointed a Committee in October 1914, under the presidentship of Sir Edward Maclagan to examine progress of the movement in the country and to suggest any measures of improvement. The Committee reported that the primary societies should be registered only after organisation on sound lines, should aim at building their own capital and should raise as much local deposits as possible. They should be business-like and their accounts should be regularly audited. The Committee recommended the establishment of Guaranteeing Unions in each province for the purpose of mutual supervision. A central bank should have a definite area and its shareholders should entirely be the societies. The most important recommendation was for the constitution of a Provincial Bank in each province to which all its central banks should be affiliated.

After the Reforms of 1919, co-operation became a transferred Department and the provinces were left free to amend the Act of 1912 to suit their requirements. Bombay was the first to amend the Act in 1925, Madras followed in 1932, Bihar in 1935 and Bengal in 1940. The Bombay Act with certain modifications has been adopted by Sind, while the Bihar Acts applies to Orissa as well. Some of the Indian States have their own Act or Regulations whereas most of the others have adopted the British India legislation with suitable modifications. Registrars have been appointed since the Act of 1904 in every province to register societies, to get the accounts audited, to carry out propaganda, and to guide and foster the movement.

Progress of Co-operation.—The general growth of the movement is shown in the following figures relating to all kinds of co-operative societies in the whole of India including Indian States:—

Quinquennial average.	Number of societies (in thousands).	Number of members in Lakhs.	Working capital (in Rs. crores).
1910-11 to 1914-15	12	5·5	5·48
1915-16 to 1919-20	28	11·3	15·18
1920-21 to 1924-25	58	21·5	36 36
1925-26 to 1929-30	94	36·9	74·89
1930-31 to 1934-35	106	43·2	94·61
1940-41	142	64·00	109·34

The expansion of the movement appears to have been rapid during the years following the last Great War until the Depression, after which the pace slowed down. The introduction of provincial autonomy in 1937 influenced the movement by giving it a new appeal and strength. At the out-break of the present war the movement was moving ahead and has kept its course straight throughout these years.

Co-operation has not been embraced equally in the different parts of the country. In some, it had to struggle hard even for a foot-hold while others were found too ready to receive it. The relevant figures are given in the following table:—

Figures for 1940-41.

Province or state.	No. of societies.	Number of Members.		Working Capital.	
		Total.	per 1000 inhabitants.	Total.	per head of population.
	Thousands.	Lakhs.		Rs. in crores.	Annas.
Madras	14	11·8	24·0	24·9	81
Bombay	5	6·3	30·9	16·9	130
Sind	1	·7	15·1	3 0	107
Bengal	40	12·91	21·4	21·2	56
Bihar	8	2·29	6·3	4·5	20
Orissa	3	1·07	12·3	1·3	23
United Provinces	17	8·18	14·8	3·3	10
Punjab	26	10·35	36·4	15·7	88
C. P. & Berar	5	1·01	6·0	5·0	48
Assam	2	·57	5·6	·8	12
N. W. F. P.	·9	·35	11·6	·2	13
Coorg	·3	·22	109·7	·2	167
Ajmer-Merwara	·8	·22	37·0	·6	170
Hyderabad (Ad. area)....	·02	·15	146·9	·3	531
Delhi	·4	·20	22 2	·4	70
Total	124	56·29	19·0	98·5	53
Mysore	2	1·42	19·4	2·7	60
Baroda	1	·66	22·8	1·1	61
Hyderabad	4	1·48	9·2	2 6	25
Bhopal	·4	·09	12·0	·1	27
Gwalior	4	·75	18·8	1·2	48
Indore	·9	·28	18·5	·9	100
Kashmir	4	·92	21·1	1·0	39
Trawancore	1·4	1·74	28·6	·7	19
Cochin	·3	·36	25·7	·5	58
Total	18	7·71	17·5	10·9	39
Grand Total	142	64·00	18·8	109·34	52

These figures clearly indicate that among the major provinces, Co-operation has progressed most in the Punjab with Madras,

Bombay and Bengal following it. Bihar, the C. P. and Assam have lagged far behind at the other end. The United Provinces, Orissa and Sind stand in between. The marked difference in the extension of co-operative action in the different parts of the country cannot be ascribed to any permanent differences. It mostly reflects the interest taken by the various Governments in the movement. This very fact explains its significant progress in such small provinces as Coorg, Hyderabad (Administered Area), and Ajmer, Merwara, where the limited extent of the area offered a great scope for concentrated effort by the Registrar of the Co-operative Societies.

Size of the Movement.—At present, the movement covers a little more than 5 million persons in British India and about 8 lakhs people in the Indian States. In other words not even 2 per cent of the population is directly associated with it. But if we take into consideration the agricultural population only, the progress does not look so insignificant.

Proportion of total agricultural population associated with the co-operative movement in 1938-39.

Province.	Agricultural members.		State.	Agricultural members.	
	Total in thousands.	% to agricultural population.		Total in thousands.	% to agricultural population.
Madras	627	10·6	Mysore	60	6·3
Bombay	254	9·5	Baroda	34	9·1
Sind	29	4·9	H. E. H. the Nizam's Dominion.	63	2·8
Bengal	597	8·4	Travancore	129	15·5
Bihar	169	3·6	Cochin	9	4·9
Orissa	89	5·4	Bhopal	13	12·2
United Provinces	452	6·6	Gwalior	76	14·9
Punjab	722	20·6	Indore	14	7·2
Central Provinces	62	2·7	Kasmir	58	11·0
Assam	42	3·1			
N. W. F. P.	27	7·9			
Coorg	15	69·8			
Ajmer Merwara	12	14·5			
Delhi	8	7·6			
British India	3,105	8·3	Indian States	455	7·7
India	3,560	7·3			

On the whole, some 7·3 per cent of the agricultural population in India is associated with the movement. Coorg records the highest percentage of 69·8 followed by the Punjab with 20·6, Ajmer-

Merwara 14·5, Madras 10·6, Bombay 9·5 and Bengal 8·4. In Sind, Bihar, the Central Provinces and Assam the percentage of agriculturists touched by the movement is below 5. It would thus appear that the Co-operative movement in the country has not yet become popular. As between the town and the village the percentage of co-operators in the urban areas is much less than in the rural parts. In order that the movement may become a living organisation affecting the actions and attitudes of the majority of the people in the country its present day embryonic size needs to be enlarged many times.

Working capital.—The following table gives an analysis of the working capital of the Co-operative Societies:—

Working capital for 1940-41 in crores of rupees.

	British India.	Indian States.	Total (India).
1. Share capital	12·56	2·11	14·67
2. Loans and Deposits from (*a*) members	9 25	1·28	10 53
(*b*) Societies	4·51	·36	4·87
(*c*) Provincial or central banks	24·41	1·76	24 17
(*d*) Government	1.15	·59	1·74
(*e*) Non-members	26·23	1·98	28·21
3. Borrowings	5·99	·49	6·48
4. Reserve and other Funds	16·36	2·31	18 67
Total	98·46	10 88	109·34

The working capital has increased from Rs. 68 lakhs in 1910 to more than Rs. 109 crores to-day, out of which Rs. 44 crores represent the members' own money *i.e.*, share capital, reserve fund and deposits. But when we consider that the working capital of the co-operative organisation in the country comes at an average to 52 annas only per head of population its insignificance becomes too painfully clear. There is hardly any room for self-complacency even for the official apologist. The working capital of the agricul-

tural societies amounts to Rs. 30·52 crores only of which some Rs. 17 crores is borrowed capital. Co-operative organisation cannot be a vital force so long as it depends on outside support. The large percentage of outside capital, well it may be from non-government sources, points to a serious weakness in the financial structure of the movement. But so long as poverty remains the life-companion of the average man in the country, we cannot hope for an improvement in this field.

Character of the Movement:—Apart from its capital structure, a study of the primary societies in India reveals stagnation pointing to grave defects in their working. The agricultural societies are in particular in a hopeless state. In 1940-41, the agricultural societies had Rs. 22·50 crores as the amount of loans due by individuals, of which nearly half *i.e.* Rs. 10 41 crores was over-due The condition of the non-agricultural societies is not so bad.

An earlier investigation by Mr. (now Sir) Malcolm Darling showed that upto the end of 1934, 24 per cent of the total number of societies started since the beginning of the movement had gone into liquidation, the percentage varying from 9 in respect of Bengal to 49 in the Central Provinces and Berar and 73 in Burma. In 1938-39, nearly 9 per cent of the total number of societies in British India were in the process of liquidation, the percentage being as high as 27·8 in respect of the Central Provinces. These high figures of mortality-rate point to the very low vitality of the sufferers. We arrive at the same conclusion if we take into consideration the audit classification of the societies in the various provinces. In four provinces 40 per cent of the Societies and 25 per cent in three others fell in 'D' and 'E' classes [1] in 1938-39. In Bengal, the United Provinces, the C. P., Bihar, Orissa, and Assam less than 10 per cent fell under 'A' and 'B' classes. Considering the high proportion of liquidations the Reserve Bank gave a sound note of warning in the statement that, "All this implies 'a prodigious waste of time, effort and money, involved in the wreckage and points to the need for improving the quality of the movement.'"[2] The situation certainly calls forth for a ruthless overhaul of the organisation to save it from an early collapse.

1. A 'D' Class Society is a bad society while 'E' class ones are definitely condemned to liquidation, with no possibility of revival. A, B and C may be said to correspond to very good, good and average.

2, Review of the Co-operative Movement in India 1939-40 p. 8.

Nature of Co-operative Action:—It has already been pointed out that the Co-operative Movement as judged by membership is predominantly agricultural in the country. Similarly the total number of agricultural societies in India was 123,976 as against 17,459 non-agricultural ones in 1940-41. In addition, there were 466 supervising and Guaranteeing Unions and 611 central banks. The Agricultural Societies however, work on a much smaller scale than the non-agricultural societies. In the following statement we compare the number of the different societies and their working capital to illustrate the point.

Figures for 1940-41.

Number.		Working capital in thousands of rupees.
Provincial Banks 10	....	13,89,22
Central Banks 601	....	29,32,48
Land Mortgage Banks 252	....	7,04,73
Agricultural Societies 123,976	....	30,52,92
Non-Agricultural Societies 17,459	....	28,52,95

In agricultural co-operation, it is only one activity *viz.*, credit which predominates over-whelmingly. Of late, other forms of co-operative action have been engaging the attention of the Provincial Governments and yet the nature of the movement remains unaffected.

Agricultural Societies in India in 1940-41.

	Credit.	Purchase and purchase and sale.	Production and sale.	Others.	Total.
	1	2	3	4	5
Number	104,084	547	6,493	12,599	123,723
% to total	84·1	0·4	5·2	10·3	100 0

Financial Structure:—The above statement brings out the overwhelming predominance of the credit societies and the comparatively poor development of other types. At the base of the financial structure of the co-operative credit are the primary societies, credit and non-credit, agricultural and non-agricultural. Unions and Central Banks appear at the next stage of the co-operative pyramid in which the apex is formed by provincial banks. This pyramidal

structure is founded on provincial basis and the Reserve Bank apparently obviates the necessity of an All India Apex Bank.

Agricultural Credit Societies:—Of the 1,23,723 agricultural Societies in India at the end of 1940-41, 1,04,084 or 84 per cent were credit societies. We have already seen that the movement has touched a small percentage of the population and the working capital of the agricultural societies reveals a very unsatisfactory position. Before commenting on this aspect of the movement, we review briefly in the following paras the constitution and operations of the agricultural credit societies. These are organised on the Raiffeisen model with minor changes to suit local conditions and usually the operations of a society are limited to one village only.

Membership: Any 10 or more persons in a village can apply to the Registrar[1] for the registration of a proposed rural credit society. The average number of members per agricultural society is 36 being about 65 in Bombay and Madras, and 25 to 30 in other provinces. These are much smaller than the non-agricultural societies in the country, which have an average membership of more than 100 persons.

Liability:—This is always unlimited in case of the rural credit primary societies unless exemption is permitted by the Government. In this respect it follows closely the haiffeisen system. But as pointed out by the Majority of the Committee on Co-operation in Madras, unlimited liability seems to have outlived its utility. The Committee[2] argues that (*i*) the principle is not intelligible to the Indian *raiyats*, (*ii*) caused apprehension and hardship bringing the movement into general disrepute, (*iii*) keeps away the better or solvent class of agriculturists, (*iv*) has little practical utility as the members' right to transfer their property is not limited, (*v*) does not in any way induce confidence among financing banks and depositors, (*vi*) the assumption underlying] it that the members should have mutual control is not correct, and (*vii*) finally, opinion is gaining ground in favour of a change from the unlimited to limited liability[3] There is sufficient reason for re-examining the entire question in the light of experience, gained since 1904.

1. A Registrar is appointed in each province for carrying out the duties assigned to him under the Act including those of registration, audit and dissolution.

2. Report p. 154.

3. The minority of the committee held that unlimited liability was an essential and basic co-operative principle and supported the view expressed by the Agricultural Credit Department of the Reserve Bank that unlimited Liability was a matter of necessity and not of choice.

Management:—On the co-operative principle of 'one man one vote' the General Meeting elects a Managing Committee of 5 to 7 members which administers the affairs of the Society and also appoints a secretary, who is paid some remuneration. He is usually an outsider since there is seldom a literate person among members and may be serving several societies in a group of villages simultaneously. In all other respects management is gratuitous.

Capital:—A small initial capital is raised from members in the shape of shares of small value, payable generally by instalments. Share capital however does not play an important part in the funds of an agricultural society. The following table shows the sources of the funds of the agricultural societies on 30th June, 1941:—

Funds of the Agricultural Societies in India.

		In thousands of rupees.	% to Total.	Average per society.
				Rs.
Share capital	....	4,15,36	13	320
Reserve and other funds	....	8,50,30	28	690
Deposits	....	2,38,28	8	200
Loans	....	15,48,98	51	1,270
Total Working Capital	....	30,52,92	100	2,480

The own funds as represented by the share capital and reserve funds came to about 40 per cent of the working capital and do not constitute more than Rs. 30 per member at an average. This reveals the gross poverty of the co-operators and brings at once into light the limitations and insignificance of the success of the co-operative achievements in the country. Deposits form a very small percentage of the working capital and of these Rs. 1·15 crores or a little less than half are from outsiders. The bulk of funds is provided by loans, largely from the provincial or central banks.

Loans:—Loans are made to members only, the maximum normal credit requirements of each member fixed by the General Meeting after a careful scrutiny of his requirements and assets. These loans are given for productive purposes, non-productive purposes and redemption of past debts. The period of repayment is prescribed by the bye-laws according to the purpose of loan. Loans for repayments of old debts and for land improvements are

for five to ten years, repayable by annual instalments. Credit is usually for an intermediate term, being restricted to a year for current agricultural and domestic purposes. The law permits mortgage security, which is taken as collateral security when the amount is large. But such a course of action is not possible in all cases as the majority of the agriculturists has no transferable rights in land. Loans in all cases are secured simply by bonds executed by the borrower and two sureties. The average working capital of a society is only about Rs. 2,500 or less than Rs. 70 per member. This indicates the limited extent to which a society may be able to meet the credit requirement of its members. At the end of 1940-41 the total loans due by members of agricultural societies were Rs. 22·50 crores giving an average of less than Rs. 50 per member. Regular or punctual repayments, even of these small sums are exceptions rather than the rule. Deficit economy is obviously the most important cause of such state of affairs. The rate of growth of overdues, which represent nearly half of loans is almost threatening a collapse of the movement. The Reserve Bank has laid particular emphasis on this aspect. It observed, "The accumulation of heavy overdues and the freezing of the assets of societies naturally resulted in clogging their business and paralyzed the working of the co-operative movement over large parts of the country. In some provinces such as the Central Provinces and Berar, Behar, Orissa and Bengal, the movement nearly collapsed."[1]

Profits: The Act requires that all profits of an agricultural credit society are to be carried to its reserve fund except when permitted by the Government. A contribution to the extent of 10 per cent[2] of profits is allowed for charitable purposes and in actual practice half of the annual profits are divided among the members after a full allocation of the total profits has been made for ten years to the reserve fund. Reserve funds of the primary societies do not always represent surplus assets as in many cases no provision is made for bad debts out of the profits. The profits of the agricultural societies for the year 1940-41 amounted to Rs. 49·79 lakhs or a little more than 1·5 per cent.

Supervision and Audit:—There is no internal supervision although Unions of societies for undertaking the work of supervi-

1. Review of the Co-operative Movement in India 1939-40.
2. 20 per cent in Bombay.

sion have been formed since the Act of 1912 permitted the registration of such societies. Such development has taken place only in Madras and Bombay. Elsewhere the work is left to the Government Agency or the Inspectors of Central Banks. The Registrars have been entrusted with the duty of audit under the Act and the auditors and inspectors appointed by the Registrar carry it out. The Registrar has also the power to dissolve bad societies, which have no prospect of a useful career.

Review of Progress.[1] Summing up the progress in 1938, Mr. Strickland observed, "It may, however, confidently be stated that prior to the agricultural depression the quality of the rural credit societies in most parts of India had been steadily improving, and the determination of the members to shake off by honest and united effort their yoke of debt was growing stronger from year to year. The depression dealt a severe blow to co-operative and to all other credit, but in several provinces and States the societies are still healthy, others are recovering from the shock, and every where there are encouraging examples of cohesion and foresight." For the pre-depression years, when the movement had not been tested by the fall in prices the Royal Commission on Agriculture had stated: 'The main results achieved may be said to be the provision of a large amount of capital at reasonable rates of interest and the organisation of a system of rural credit which, carefully fostered, may yet relieve the cultivator of that burden of usury which he has borne so patiently throughout the ages. Knowledge of the co-operative system is now wide-spread; thrift is being encouraged; training in handling of money and in elementary banking principles is being given. Where the co-operative movement is strongly established, there has been a general lowering of the rate of interest charged by money-lenders; the role of the money-lender has been loosened, with the result that a marked change has been brought about in the outlook of the people." Nonetheless the

1. See (i) Review of the Co-operative Movement in India by the Reserve Bank, (ii) Statutory Report of the Reserve Bank, (iii) Co-operative village Banks, Bulletin No. 2, of the Reserve Bank of India, (iv. Report of the Royal Commission on Agriculture in India (v) Reports of the Central and Provincial Banking Inquiry Committees (vi) Report of Maclagan Committee, (vii) Reports of the Provincial Committees on Co-operation (viii) Annual Reports of the Provincial Co-operative Departments, (ix) Statistical statements relating to the co-operative Movement in India, (x) The Indian Co-operative Review (xi) Co-operaton in India by H.L. Kaji, (xii), Co-operation in India by C.F, Strickland.

Commission found that increase in numbers had not always been accompanied by improvement in quality. Thus in the United Provinces the Oakden Committee, appointed in 1925, found that the village society was mostly a sham; the principles of co-operation were not understood; and a general dissolution of the movement could only be avoided by drastic reorganisation. Evidence of stagnation and liquidation was forthcoming from many provinces. Later on the Central Banking Inquiry Committee found that although the financial position of the primary societies had not deteriorated in any way since the Royal Commission reported but in almost all provinces the rapidity of expansion of the movement had been suspended. Over-dues were becoming a serious problem. Then came the Great Depression, which witnessed a partial collapse of the movement in large parts of the country. We have already alluded in previous paras to the large percentage of overdues, clogging of the channels of co-operative credit and liquidation of the societies since the Depression. The fall in prices brought to light certain defects in the working of the movement, which had remained at least partially obscured during the period of rising prices and prosperity. These were in the words of the Reserve Bank, 'the evils of over-borrowing, of lending without full regard to the repaying capacity of the borrower, of frozen dues disguised by fictitious repayments, of disregard of real co-operative principles, as well as the consequences of a partial and one-sided approach to the rural economic problem with relative over-emphasis on credit co-operation and comparative neglect of the essentials of co-operation in other important spheres of a farmer's life.'

Estimating the effects of the co-operative movement the Committee on co-operation in Madras noted that, 'one section of witnesses point out that the development of the movement has neither been sound nor efficient, that it has been no more than a money-lending concern, that its origin and growth have not been spontaneous but are due to external official stimuli, that, as it has not sprung out of the felt needs and a realization of its utility by the people, it has not acquired the strength and vigour natural to a popular movement.'[1] It is certainly true that howsoever the movement may be sound at the core, its working is very defective and of little practical utility. It has hardly reached 6 per cent of the

1 Report p. 342.

families, while the total membership is only a little more than 1 per cent of the rural population. Even those who have been embraced by it, have been benefited at best by borrowing Rs. 50 at an average at rates of interest slightly lower than that of the village *baniya*, but which have been almost twice as high as the controlled rates under the provincial Debt Acts at present. If that is all, which co-operation has achieved so far, even the slightest claim to its success looks ludicrous. And yet, co-operation, if properly reconstructed and revitalized, may not only provide the most suitable agency for agricultural credit, but may even be the motive power for agricultural progress in the country. It is its proper application that is lacking. Co-operation so far has been applied at the wrong end to solve the problem of credit, which however has no separate existence except as a part of the economic problem of the agriculturist, which is complex and requires a many-sided treatment. 'The co-operative credit movement can flourish only if agriculture prospers; it cannot thrive in the midst of a thriftless, improvident and unprogressive agricultural community, its solvency is founded on the solvency of agriculture and its success bound up with prudence, providence and productivity of labour of the agriculturists. Co-operative credit may itself contribute to this productivity, but it must be assisted in the task by the simultaneous effort of several other agencies to the same end.'[1] One cannot find better words than these of the Reserve Bank to sum up the case.

Central Banks:—The co-operative primary societies are usually federated into a central society known as 'Central Bank' or a 'Banking Union'. The membership of the banking Unions is confined to members only while the central banks have a mixed membership of individuals as well as societies. In practice the distinction is gradually disappearing and the central banking organisations have on their Boards of Management some individuals of influence and business capacity, besides representatives of primary societies. The area of operation of central banks varies widely from a *taluka* or *tehsil* in some provinces such as Bengal, Bihar and the Punjab, to a district or several *tehsils* in other provinces like Bombay, Madras and the Central Provinces. These banks are organised to finance the primary credit societies and they also act

1. Review of the Co-operative Movement p. 84.

as balancing centres to them. Their other banking business such as collecting bills, cheques, *hundies* etc. acting as agents of their customers for sale and purchase of securities, gold and agricultural produce, or issuing drafts and *hundies* is very little. In some provinces, central banks also advance loans to individuals against real property. The working capital of the central banks consists of share capital, reserve fund, deposits, overdrafts and short term loans. They are required to carry 25 per cent of their net profits to their reserve funds and to maintain adequate fluid resources by adhering to the requirements laid down by the Registrar.

In 1940-41, there were 611 Central Banks and Banking Unions in the country with a working capital of Rs. 29·32 crores derived as follows:—

1. Share capital Rs. 2·67 crores.
2. Loans and deposits from
   (*a*) Individuals Rs. 13·92 „
   (*b*) Societies Rs. 3·27 „
   (*c*) Provincial or Central Banks 4·51 „
   (*d*) Government 0·58 „
3. Reserve and other Funds Rs. 4·37 crores.

The first and last constitute the owned resources of these banks as distinguished from the borrowed funds, which account for 76 per cent of the working capital. A proportion of 1 to 8 is prescribed for the two sources as the minimum to be observed in all parts of the country. The ratio in actual practice is much higher but the reserve funds have been created without adequate provision for bad debts and as such are fictitious in part at least. The loans outstanding at the end of the year 1940-41 amounted to Rs 18·31 crores from societies and Rs. 66 lakhs only from individuals. It is usual not to grant loans for periods longer than those for which deposits are available but overdues form a fairly large proportion of the outstandings of Central Banks Bad debts may also account for another large sum. The low solvency of the Central Banks may be judged by the fact that in Bengal, Bihar, Orissa and the Central Provinces many of these were unable to meet the withdrawals of deposits, while in North Orissa they transferred their management to the Registrar for six years. The evils

of reckless over-financing of societies, inefficient supervision and disregard of sound principles of banking have caused deterioration in their quality. The faulty organisation of the primary unit is also a cause of the failures of the Central Banks.

The Reserve Bank therefore suggests the limitation of the area of operation of these banks so that they may exercise better supervision over their constituent societies. A small unit however may not be able to pay its way. Nonetheless, unless the primary units are healthy, the central banks will always be pulled down. They should therefore try to do their best to pull out these primary units from the morass into which they have fallen at present. The Central Banks are not merely balancing centres as in other countries but are the financing agencies for primary societies. They should therefore adhere all the more to sound banking principles and in particular, maintain adequate cash and fluid resources, and prudent margin between borrowing and lending rates. These should further confine themselves to short-term loans in general, and make provision for bad debts. Doubtful debts and overdues should also receive proper treatment after careful separation.

Provincial Co-operative Banks:—After the recommendation of the Maclagan Committee for the setting up of an apex bank in each major province, such banks came to be established accordingly, the United Provinces having been the last to have constituted one in 1944. Among the Indian States, Mysore and Hyderabad have apex institutions. Their constitutions differ widely. In the Punjab and Bengal societies alone are members and the Directors are exclusively the representatives of the affiliated central banks, banking unions and other societies. In Bengal there are three Directors from non-members nominated by the Registrar. The membership is open to individuals as well as societies in other provinces and in consequence there is a mixed Board of Directors consisting of representatives of societies as well as of individual members. The Registrar is an *ex-officio* Director in a number of provinces. The functions of these apex banks are more or less the same in every Province, *viz*, co-ordinating the finances of the Central Banks and act as financing agencies for them. These banks used to finance the village societies as well directly in the beginning but such direct dealings are not now general except in the case of special types of societies. In Sind however the Provincial Co-

operative Bank deals with the village societies directly as the central banks have been amalgamated with it. In a few districts in Bombay as well, the Provincial Bank has direct dealings with the village societies.

The total working capital of the 10 provincial banks at the end of the year 1940-41 amounted to Rs. 13·89 crores of which Rs. 79·56 lakhs represented share capital, Rs. 1·58 crores reserve and other funds, and the balance *i.e.* Rs. 12·51 crores loans and deposits. Altogether the borrowed resources of the provincial banks formed about 83 per cent of the working capital. Deposits and loans are primarily from individuals amounting to Rs. 6·53 crores. Societies contributed Rs. 1·25 crores to deposits, Provincial and Central banks Rs. 3·14 crores and Government Rs. 59·25 lakhs only. The provincial banks like the Central banks draw their funds mainly from the public. The provincial banks of Bombay, Madras and the Punjab have also floated long term debentures with success. Their role as a link between the co-operative credit organization and the general money market and commercial banks is not insignificant. These banks advance loans to banks and societies and to a very limited extent against security to individuals as well. Nearly half of the borrowed funds are invested in Government and other securities.

On the whole, the financial position of the banks is satisfactory. But so long as the base remains unsound on which the superstructure is raised, there is no ground for complacency. The solvency of the provincial and some central banks has been achieved by withdrawing funds from the co-operative movement and re-investing the same in ordinary commercial banking business. The proper role of an apex bank is not to safeguard its own interests by such measures as this but to play its proper part in the rehabilitation and reorganisation of the societies for whose assistance it has been organised.

Land Mortgage Banks:—A recognition of the fact, although very late, that the ordinary co-operative societies are not in a position to meet the long-term credit requirements of the cultivator led to an effort towards land mortgage banking. The first land mortgage bank was organised in 1920 in Jhang in the Punjab. When Central Banking Inquiry Committee reported there were 12 co-operative mortgage banks in this province. These were strictly

speaking, as elsewhere in the country, of a quasi-co-operative character *i.e.* associations of borrowers and non-borrowers. The Punjab banks did not succeed and encountered serious difficulties during the Depression. The Land Alienation Act has also stood in their way.

Land Mortgage Banking has made a marked progress in Madras, where after the establishment of the Central Land Mortgage Bank in 1929, the number of such banks increased from 12 to 119. Bombay has also organised in 1935 a Central Land Mortgage bank on the lines of Madras. Elsewhere there has been little progress in this direction except to a small extent in Orissa, where a Provincial Co-operative Land Mortgage Bank was organised in 1938-39. Apparently, other provinces have also land mortgage banks, there being 5 in Bengal, 21 in the Central Provinces and Berar, and a few in the United Provinces, Assam and Ajmer-Merwara. But all these are petty undeveloped institutions doing little practical service.

The operations of the 252 Land mortgage banks and Societies in India having 1·05 lakhs of members during 1940-41 were as under:—

		Crores of Rupees.
Share capital	....	0·44
Debentures from the public	....	3·03
Debentures from Government	....	0·06
Deposits		0·15
Reserve and other funds	....	0·14
Loans	....	3·22
Total working capital	....	7·05
Loans to Individuals	....	Rs. 59·36 Lakhs.
Loans to Banks and societies	....	54·72 Lakhs.
Profits	....	4·57 Lakhs.
Loans due by individuals	....	3·51 Crores.
of which overdue	....	0·12 Crores.
Banks and Societies	....	2·84 Crores.

Before commenting further on the working of the land mortgage banks, it is essential to have an idea of the system in Madras and Bombay, the two provinces, where it has broken some ground.

Land Mortgage Banking in Madras.[1] As recommended by the Townsend Committee, the Madras Co-operative Central Land Mortgage Bank was established in December 1929 with the main object of financing the primary land mortgage banks. The authorised share capital of the Bank is Rs. 20 lakhs divided into 20,000 shares of Rs. 100 each which have been subscribed both by individuals and primary Land mortgage banks. The Registrar of Co-operative Societies who is the Trustee of the Bank, is an *ex-officio* member of the Board, which administers the affairs of the bank. The Board consists of 18 members of whom 9 represent the primary banks. The Registrar, the President, the Vice-President and the Treasurer with two representatives of the Land mortgage banks form an Executive Committee to which the Board may delegate all or any of its powers. The working capital of the bank is raised by flotation of debentures on the security of mortgages and other assets transferred to it by primary land mortgage banks. Debentures can be issued only to the extent of 25 times its paid up share capital and reserve fund. The bank has been floating debentures for 20 years at 3½ per cent, interest being payable half-yearly. For repayment a separate sinking fund has been created. These debentures have not only been declared as Trustee securities but the Provincial Government has also guaranteed fully and unconditionally the principal of and interest on the debentures of Rs. 310 lakhs. To enable the bank to issue debentures in bulk, Government gives temporary accommodation to the bank, subject to certain conditions.

The Central Land Mortgage Bank acts as a financing agency to the primary land mortgage banks, whose areas of operation extend to a *taluka* in each case. Membership of a primary land mortgage bank is restricted to persons owning agricutural land. No primary bank floats its own debentures now. They borrow from the Central Land Mortgage Bank, the maximum borrowing limit in each case being restricted to 20 times the paid up share capital and reserve fund. The primary banks lend to their members generally up to a maximum of Rs. 5,000. The purposes for which loans are granted are redemption of mortgages, repayment of prior debts and improvement of land or methods of cultivation. Sometimes loans are also granted for purchase of land to round

off holdings. The loans are repayable in 20 years and carry interest at 1 per cent more than the borrowing rate of the primary banks. Loans are granted on security of land up to 50 per cent of the estimated value in respect of irrigated lands and 20 to 30 per cent in case of other systematically cultivated lands. It usually takes time to get a loan from a primary mortgage bank as a careful scrutiny of a would-be borrower's title to the lands, his capacity to repay and an estimate of the value of his land after a personal inspection of the property by the Sub-Registrar is made before a loan is recommended by the Board of Directors of a primary bank. The Executive Committee of the Central Land Mortgage Bank finally sanctions the loans.

The development of Land mortgage banking in Madras has been facilitated by the Madras Co-operative Land Mortgage Banks Act X of 1934, which has conferred on these banks summary powers for the speedy recovery of arrears through distraint and sale of property without intervention of the Courts. The Government has assisted the movement further by granting many concessions in fees and by providing a special staff, which consists of 34 Co-operative Sub-Registrars and 3 Deputy Registrars. In the initial stage the Government was bearing the entire cost of these officers; but now the Central Land Mortgage Bank meets a considerable portion of the expenses in this connection. Besides, the Government paid a subsidy of Rs. 29,000 in the first two years towards the working expenses of the Central Land Mortgage Bank.

The amount disbursed annually by the Central Land Mortgage Bank had steadily increased from Rs. 42,200 in 1929-30 to Rs. 58·52 lakhs in 1938-89. Since the out-break of the war it has declined year after year registering a steep fall from Rs. 40·32 lakhs in 1941-42 to Rs. 23·65 lakhs in 1942-43. The demand for credit seems to have shrunk considerably as a result of the rise in prices and land values. Moreover, tke Bank has adopted a policy of restricting loans to Rs. 5,000 to an individual as against Rs. 10,000 before. This has also reduced the amount of loans. At the end of the year 1940-41 the amount of outstanding loans was Rs. 2·42 crores and debentures to the extent of Rs. 2·43 crores were in circulation.

Land Mortgage Banks in Bombay.[1] Land Mortgage banks were started for the first time in this province in 1929, one each at Broach, Pachora and Dharwar. These were financed by the Bombay Provincial Co-operative Bank by floating debentures of Rs. 5 lakhs. On the recommendations of a committee appointed in 1933 to examine the problems of Land mortgage banks in the province, a Provincial Land Mortgage Bank was organised in 1935. Ten more land mortgage banks were also organised in the same year and at present there are 18 primary land mortgage banks. The membership of these primary banks is open to both borrowers and non-borrowers and the Board of Directors consists of two representatives of each and one representative each of the Provincial Land Mortgage Bank, the Registrar and the District Central Co-operative Bank. Loans are advanced to members almost in the same manner and on the same basis as in Madras, the maximum amount however, being still Rs. 10,000 in a case. The margin between the lending and borrowing rates of the primary banks is also higher at 1½ per cent.

The primary banks obtain their finance from the Provincial Land Mortgage Bank, which commenced working early in 1936. Its authorized share capital is Rs. 10 lakhs, divided into 10,000 shares of Rs. 100 each. These shares have been subscribed by the non-borrowing individual members and primary land mortgage banks. The Board of Directors consists of 15 members of whom five are representatives of the primary banks, six of the non-borrowing members, two nominees of the Registrar, the Registrar and one nominee of the Provincial Co-operative Bank. The Executive consists of seven members. The working capital is obtained mainly from the floatation of debentures, which are issued almost under the same conditions as in Madras. Here too, the Government has helped the movement in much the same way as the Madras Government did in their own province, but there is no special Act giving summary powers for realizations to the Banks as is the case there. The necessity of such legislation is greatly felt.

The Central Land Mortgage Bank issued debentures to the extent of Rs. 30 lakhs in two series and the loans outstanding at the end of the year ending 30th June 1941 amounted to Rs. 27·93 lakhs.

1. See *Indian Co-operative Review* Vol. VII No. 2.

The fresh loans have decreased from Rs. 6·07 lakhs in 1939-40 to Rs. 3·97 lakhs in 1942-43. This contraction in long-term credit may be ascribed in part to the Debt legislation and in part to improvement in the repaying capacity of the land-holders during the present war.

Review of the working:—The land mortgage banks have so far advanced loans mainly for the repayment of prior debts and very little for productive purposes. To illustrate, out of the loans of Rs. 27·22 lakhs advanced by the Bank in Bombay up to 30th June 1940, loans for Rs. 26·77 lakhs were for redemption of debts, loans for Rs. 16,300 were for improvement of lands and loans for Rs. 27,700 were for purchase of lands. Similar is the case in Madras. But there is hardly any need greater than for the grant of loans for improvement of land and agriculture. It appears as the Royal Commission remarked 'that whilst there is some demand for facilities to repay old debts or redeem mortgages, there is no strong demand for long term money for land improvements.' Similarly perhaps the primary banks have not encouraged such loans as there is no suitable agency to advise them on the agricultural, economic and financial aspects of schemes for which these may be required. A co-ordination therefore of the activities of primary banks and those of such Departments as Agriculture and Industries is greatly needed.

Loans for the purchase of land, which is the primary function of land mortgage banks in some of the economically advanced countries should also be granted more liberally with a view to establish the industrious peasant on his holding. Such loans, if properly co-ordinated, will prove self-liquidating like loans for the improvement of land. It is in this way perhaps that land mortgage banking can help in improving the standard of farming of the tenants.

In brief, the need of the cultivator for long-term credit to improve his land and methods of cultivation is really great. The land mortgage banks provide a suitable agency for meeting this requirement although in actual practice they have not discharged this obligation to any appreciable extent. Hence the business of these banks should increasingly be concentrated in this direction.

At the same time those provinces, where land mortgage banking has made little or no progress should try to develop it by establishing Central Land Mortgage Banks as in Madras. Finally, the limitations of these banks in improving the income of the cultivator should not be overlooked. The work of land reclamation and improvement in the country requires not only a concentrated drive but an investment of hundreds of crores of rupees, all of which may not be financially paying as judged by the balance of expenditure and receipts of a private operator. It may yet be essential in view of the total advantages to be derived from it. Capital for such improvements cannot of course be provided by banks working on strict business principles. It is the state, which will have to find such sum and even more for large capital investments in the industry. The Government in the country might have learnt by now that in land improvement in Europe, 'when the question is one of large scale works, where the interest of the community is predominant, the State most often assumes the initiative and meets the larger proportion of the costs'[1] It is not too early for the Government of India to play a sedulous ape to these foreign Governments.

Co-operative Marketing:—[2] Outside the organisation of credit, agricultural co-operation has made little headway, the total number of non-credit agricultural societies being in 1940-41 19,649 only as against 1,04,084 of agricultural credit societies.

The statement given below indicates the lines along which non-credit agricultural co-operation has developed in the country:—

1. See "Land Reclamation and Improvement in Europe" (published by League of Nations).

2. For detailed information see 'Report on the Co-operative Marketing of Agricultural Produce in India' issued by the Agricultural Marketing Adviser to the Government of India.

Non-Credit Agricultural Societies, 1940-41.

Province.	Purchase and sale.	Production.	Production and sale.	Others.	Total.
Madras	205	....	115	426	746
Bombay	63	18	101	192	374
Sind	3	....	15	6	24
Bengal	78	1070	684	73	1905
Bihar	33	....	1338	1	1422
Orissa	11	....	6	....	17
United Provinces	21	....	1601	6229	7851
Punjab	16	662	2185	227	3090
C. P. & Berar	60	19	4	...	83
Mysore	35	....	22	32	89
Baroda	7	24	46	77	154
Hyderabad	....	3482	....	....	3482
Other areas	15	23	326	38	402
Total	547	5298	6493	7301	19,639

It will be observed from the above table that the largest number of non-credit co-operative societies are those for trading. This development has taken place as, obviously, group marketing of agricultural produce offers a great scope for improvement of the condition of the farmers. The Royal Commission on Agriculture has recorded that 'group marketing must be more efficient than marketing by individuals, especially in conditions such as those which exist in India where the individual producer is such a small unit. The ideal to be aimed at is, therefore, co-operative sale-societies which will educate the cultivator in the production and preparation for market of his produce, will provide a sufficient volume of produce to make efficient grading possible and will bring the producer into direct touch with the export market and with the large consumers in this country such as the cotton and jute mills'. The Central Banking Inquiry Committee also strongly recommended the establishment of the co-operative sale societies.

Progress:—The position of the progress of agricultural marketing at the close of 1939-40 may be judged from the following statement:—[1]

Figures in thousands except those of the number of societies.

Province and States.	No. of societies.	No. of members.	Working capital.	Sale of goods to members.	Value of members produce purchased.	Approximate value of the total produce handled.	Cost of management.
			Rs.	Rs.	Rs.	Rs.	Rs.
Madras ...	272	39 & + 3	6361	966	1003	1,58,80	240
Bombay ...	173	31	2520	1162	262	7992	263
Sind	18	2	721	a	a	250	11
Bengal	451	51	1793	614	591	1500	209
Bihar	1421	36	128	2	1533	1600	30
Orissa	14	7	134	171	180	180	3
U. Provinces	1534	274	1626	1,58,34	2,20,41	7,89,30	299
Punjab* (1938-39)	46	5 +1	650	3721	3764	3764	43
C.P. & Berar	13	1	37	a	a	130	a
Assam	18	n	6	4	4	4	n
N. W. F. Prov.	7	n	77	392	375	395	17
Coorg	13	a	a	a	a	a	a
Total	3980	446 & +4	14,053	2,28,66	2,97,53	11,06,25	1115
Mysore	44	1	84	1	1	171	n
Baroda	53	5	243	1530	1514	30,44	38
Hyderabad	19	2	115	109	101	109	4
Gwalior	1	n	178	a	a	232	a
Travancore....	20	a	a	a	a	a	a
Cochin	3	n	1	a	a	a	a
Total	140	8	621	1640	1616	3556	42
Total India.	4120	454 & 4	1,46,74	24,5,06	3,13,69	11,41,81	1157

*Trading societies only. a. Figures not available, + society members n=Below 50.

1. Report on the Co-operative Marketing of Agricultural Produce in India p. 32.

On the whole, the trading societies, which numbered 4,120 at the close of 1939-40 and had a membership of 4·5 lakhs and a working capital of Rs. 1·5 crores, handled agricultural produce worth about Rs. 11·42 crores. They have developed most in the United Provinces and Bihar mainly for the marketing of sugarcane. The 1900 sugarcane societies in the two provinces handled produce worth about Rs. 7 crores.

Co-operative Marketing of Sugarcane:—Marketing of sugarcane on co-operative lines to the vacuum pan sugar factories is assuming a great importance. The Sugarcane Act of 1934 and in particular the U. P. Sugar Factories Control Act, 1938 have given a great impetus to the movement. In the United Provinces, 80 per cent of the sugar cane supplied to the factories in 1940-41 was handled by the marketing societies. In Bihar they handled 13 per cent. There are two types of sugarcane societies in the United Provinces *viz.* the Zonal, whose area of operation is limited to 5 to 7 miles from a sugar factory and others which operate in a whole district or sub-division. Originally, only individuals were members of these societies, but recently the policy has been changed to organize a primary society in each village and federate them in the Central Zonal or other societies. There is no share capital and the liability of the members to the debts of the society is usually limited to Rs. 50. The management is entrusted to a Board of Directors, on which there are nominees of the Cane Development Officer, District Officer and financing bank as well in addition to the elected members. Loans are advanced to members for meeting the requirements of cultivation up to a maximum of Rs. 50 per acre of the crop. These are realized from the price of sugarcane. Seed and manure are also supplied on credit. But their main business is the marketing of sugarcane. A survey is made by a sugarcane society of the estimated produce of its members, who enter into a contract with the society for the disposal of the same. A society then enters into contracts with sugar factories for the supplying of sugarcane at its various purchasing centres. A calendar for the supply of sugarcane is prepared for each member on the basis of which supply tickets are issued. At the purchasing centre, the factory sends its employees for weighing, loading and for the payment of prices to the cultivators. To safeguard the interest of the members, supply is weighed by society's own weighman, who gives a receipt to the members stating the amount of cane

supplied and the factory makes the payment on presentation of these receipts within a week. In this way, the cultivators receive the entire price paid by the factories. The society gets the agent's commission from the factories, which under rules framed by the Government has been fixed at 3 pies per maund for the first 5 lakh maunds of sugarcane supplied, 2 pies per maund on the next 5 lakh maunds and 1 pie per maund on the remainder.

The societies do not arrange for the disposal of the entire sugarcane supply of their members, which may be in excess of factory requirements. This is a serious deficiency as in years of overproduction, when the problems of marketing are more acute, cultivators cannot look to their trading societies for assistance. There is also a great scope for the expansion of the activities of these societies in other directions so as to embrace at least the marketing of all other produce.

Co-operative Marketing in Madras:—In Madras marketing has been linked with credit and a number of loan and sale societies have been organized since 1924-25. These societies handle a number of commodities such as paddy, rice, cotton, groundnuts and *ghee*. The main objects of the sale societies are to advance loans to their members on the security of their produce and to arrange for the sale of produce of their members. Loans are restricted for cultivation expenses, payment of land revenue, and to hold up the produce for a better market. A Provincial Marketing Society was established in 1936 to help sale societies and co-ordinate their work. It deals mostly in retail from its godown in Madras. Besides the loan and sale societies there are a number of other types of marketing societies. The most important among these are for the supply of milk. The milk supply societies have been started since 1926-27 in the neighbourhood of cities. The primary milk societies are federated in Co-operative Milk Supply Unions in the cities. The Madras Co-operative Milk Supply Union supplied 6·9 per cent of the total milk consumed in the Madras city in 1939-40. But in this province too the activities of the marketing societies have been confined to single purposes and as such have little utility and appeal.

Cotton sale Societies:—The marketing of cotton on co-operative lines has assumed some importance only in Bombay particularly in Karnatak, Khandesh and Gujrat. A few of these societies have their own ginning and pressing plants. These societies sometimes

handle other commodities as well, such as, ground nuts, wheat and jowar.

Co-operative Grain shops, Punjab:—The number of production and sale societies in the Punjab is in the vicinity of 2000. But, many of these are better farming or consolidation of holdings societies. Practically, there were in 1938-39 only 30 sale societies of which 20 were grain shops. Co-operative grain shops in the Punjab are like disabled bodies, whose number has been more or less stationary while the societies affiliated to them have decreased from 1,269 in 1932-33 to 926 in 1938-39. A number of embezzlements, lack of business experience on the part of Directors and the disloyalty of members were some of the important causes of the failure of these shops while among the minor causes may be mentioned 'organised boycotts by the *arhatiyas*, bad debts and thoughtless advances, communalism and the tendency of the Directors to push in proteges of their own on the staff of the societies'[1] These shops were organised to replace the *arhatiyas*, but it appears the solution of the problem of marketing does not lie along these lines.

Need and scope of Co-operative Marketing:—In view of the fact that, as has been analysed in a previous chapter, a disproportionately small share of the price paid by the consumer reaches the producer, the conclusion is irresistible that organised marketing should be introduced on a wide scale. There has been little progress so far in the growth of co-operative marketing, not because the cultivators do not welcome the movement, but plainly speaking because little attention has been paid to the movement by the organisers and there has been no serious effort to put it on proper footings. In this connection, the Report[2] issued by the Agricultural Marketing Adviser has rightly drawn attention to the need for legislation to force the minority to join a co-operative production and sale society in a particular area and the desirability of setting up price control Boards for fixing minimum prices of better quality agricultural produce. It has also suggested that the possibilities for the co-operative processing of agricultural produce should be fully explored. There is a definite scope for introducing co-operative marketing in the country and for a simultaneous extension of its activities for its own success. But it needs more than individual or even collective effort of the farmers. 'Indeed the beneficent

1. Report on "The Marketing of wheat."
2. Report on "The Co-operative Marketing of Agricultural Produce in India."

work of three decades of co-operative effort to improve the lot of the cultivator,' records the Reserve Bank, 'has been imperilled by the disturbing impact of external forces on the agricultural economy of the country. The stabilization of prices is a major desideratum for the ordered progress of co-operation. But the task of securing stability of prices is largely that of stability of the economic system in general.'[1] Any way, the problem has to be faced and the task done. Co-operative action by itself is perhaps too limited to carry us through a successful readjustment and reorganisation of our agricultural economy. Planned economy which offers the only solution may have a room for it but it cannot be based entirely or exclusively on such activity, on howsoever a broad base it may be organised.

Better Living; Better Farming and Consolidation of Holdings:— The only other type of co-operation, which has assumed some importance is co-operative consolidation of holdings, an activity which has already been reviewed in a previous chapter. The better living Societies received much attention in connection with the work of rural development and formed its nucleus. These were first organised in the Punjab to moderate expenditure on social ceremonies and later on in the United Provinces. Under the rural development programme their activities have been many including the improvement of roads, digging of wells and tanks, provision of dispensaries and schools and improvement of the methods of cultivation. Their activities however did not improve the material well being of their members in any substantial manner, while their number has been very small. The better farming societies, found mainly in the Punjab are of a similar category.

Rehabilitation and Reorganisation:—Inspite of the limitations of co-operative action and in view of the limited progress that it has made in the country, its development along sound lines is still a primary necessity. In reality, it provides the starting base for the establishment of that system of agricultural economy, in which the farmers may have an equal chance of improving their standard of living along with the workers in the industry. But it cannot be anything more than that and as such we should begin with it but must not end with it. Co-operation in its true role is an educational movement rather than an economic movement—a medium and not an end in it itself.

1. Review of the Co-operative Movement in India, p. 50.

The various Local Governments, in their desire to rehabilitate the movement, appointed within the last ten years committees[1] of inquiries in their own respective areas and have adopted fresh programmes of reconstruction on the basis of their recommendations. The schemes of rehabilitation differ in different provinces but are based in broad outline on the Rehabilitation Scheme in Burma. These have included a programme of removing the dead wood from the co-operative body by scaling down debts to the repaying capacity and provision of fresh finance preferably in kind. They have however failed to give vigour and life to the movement, which may lend spontaneity to its character. We perhaps need a complete reorientation of policy in this respect.

Committee on Co-operation in Madras—This Committee submitted its report in 1940 and since the problems in the various parts of the country are more or less common, it is proposed to summarize its main recommendations. The committee records that the movement has shown signs of deterioration and stagnation and depression has forcibly brought into relief the deficit nature of agricultural economy. They have therefore suggested that in dealing with the problem of agricultural indebtedness the Government should proceed from the empirical to the systematic stage of relief. Land Mortgage banking, which is so well suited for the provision of long-term credit for the repayment of old debts or for land improvements should be developed speedily. But the provision of long-term credit solves only one aspect of the problem. The credit societies which look to the other aspect and provide current capital are in many cases in a stage of stagnation and have ceased to be effective suppliers of cre-

1. The following statement contains a list of the various reports:—
   (*i*) Report of the Committee of co-operation in Travancore, 1935.
   (*ii*) Report of the Committee of co-operation in Mysore, 1935.
   (*iii*) Report on Co-operative Societies and Banks in Gwalior, 1937.
   (*iv*) Report on Agricultural Indebtedness in H. E. H. The Nizam's Dominions, 1937.
   (*v*) Report on the Reorganization of Co-operative Movement in Bombay 1937.
   (*vi*) Report on the enquiry into conditions of the Co-operative Movement in Orissa, 1938.
   (*vii*) Report on the Sind Provincial Co-operative Bank 1935
   (*viii*) Report of the Berar Co-operative Enquiry Committee 1939.
   (*ix*) Report of the Board of Experts for Co-operative Rehabilitation, Bihar, 1939.
   (*x*) Report on the Co-operative Movement in the Punjab, 1935.
   (*xi*) Report of the Committee of Co-operation in Madras, 1940.

dit. The Committee suggests the principle of limited liability for the future organisation and development of co-operative credit institutions. But much cannot be achieved unless many leakages in the pocket of the ryot are stopped. Having this point in view marketing organisation should be combined with marketing finance and social extravagance should be checked while thrift and savings should have a due place in co-operative scheme. It is also necessary that efforts should be made to increase income of the agriculturists by providing spare time employment through the development of subsidiary industries. It requires a co-ordination of all the development departments of government. As a matter of fact the recommendation of the Royal Commission on Agriculture that a 'Co-operative Society should be the Unit through which the various departments of Government concerned with rural welfare carry on their activities' has not been implemented in any part of the country.

Recommendations of the Reserve Bank:—For reorganisation of the movement, the Reserve Bank has suggested[1] that the present mode of work of a co-operative village society must be modified in five directions; (1) it must take up the whole of the village life within its ambit; (2) it should aim at including every one in the village; (3) there must be a greater adherenee to essential co-operative principles; (4) there must be constant dealings and continuous touch with the members and (5) concentration on a few selected areas should be aimed at rather than wide multiplicity and diffusion.

Multi-purpose Society:—The Reserve Bank has placed particular emphasis on widening the scope of functions of the primary societies. 'Starting with credit for current needs, a society may get the old debts of its good members liquidated through a land mortgage bank, introduce better living measures by adopting bye-laws by common consent which will curtail ceremonial expenditure and remove insanitary habits, provide medical relief, and so on.' The suggestion is diagonally opposed to the opinion expressed by the Royal Commission *viz*: 'As a matter of principle, the single purpose society seems the best line of development. "One thing at a time" should be the policy.'

But the stagnation, deterioration and failure of the credit societies should be sufficient to retrace our steps from the time

1. Co-operative Village Banks, 1937.

honoured routes. A co-operative organisation of the entire farm economy may bring more substantial results than the mere replacement of the village *Bania* or *Arhatya*. Such co-ordination will actually give strength to a society by adding to the incomes of its members and make them more business-like. Even in Europe credit is now a pre-Great War movement, which has hardly spread afterwards.[1] It is certainly true that 'the cultivator could be led along the path of 'better farming, better business and better living' only through an organised effort to deal simultaneously with the various disabilities under which he suffers.'[2]

There is however, one great limitation in the way of the development of the multi-purpose societies *viz.*, that of management. A society with comprehensive functions cannot be managed efficiently by the illiterate masses in the villages. In consequence, either these societies would fail under present conditions or their control would be centered in one or a few intelligent and educated individuals. In one case the movement will collapse, in the other it will defeat its own object. Yet the necessity of such integration and co-ordination of functions cannot be over-emphasized.

What then should we do? We may better start with a comprehensive plan of education, including technical training in agriculture, industry and commerce for the selected few. In the meanwhile land should be transferred from individual holders to the village communities. After this preliminary work has been completed and a co-operative better living society has functioned in a village for say at least five years on the basis of compulsory membership of each individual, complete transition to co-operative economy may be effected through a society taking charge of the 'whole man' and of all the individuals in a village. The entire economic activity in a village will come under its direct control. It will then be an easy step to collectwise all forms of production so as to maximise their out-put and secure the highest standard of living for all. During the transitional stage from private economy to co-operative economy the government may be required to pass suitable legislation to help the movement in general by such measures as prohibition of private sales of village produce, Government purchases of surpluses of co-operatives at a premium or grant of subsidies to them.

1. "Co-operation at Home and Abroad by C. R. Fay." Vol. II 1939, p. 488.
2. Review of the Co-operative Movement in India, p. 20.

CHAPTER XIII.

State Aid, Research and Education[1]

Agricultural Policy Prior to 1870:—A definite agricultural policy, if it existed at all in these early days, finds no expression in definite pronouncements. It has to be inferred from State action in relation to agriculture. Attempts were made by the East India Company to encourage the production of exchangeable crops 'to counterbalanee the decline in manufactures by a proportionate development of the agricultural wealth of the country.'[2] Thus from 1780 to 1802 the Company subsidized and supported the indigo industry. Later on it became interested in the extension of the cultivation of cotton and the establishment of that of tea. The cultivation of drugs, flex, numerous timber and fruit trees were all tried and encouraged with the same object in view. 'Tuber and fodder crops were also given special attention. Vegetable seeds were obtained from all parts of the world and every endeavour was made to establish them here. Several types of potatoes and sweet potatoes, creal crops and pedigree wheat were also tried.....In a word steps were taken to help all branches of agri-horticulture and arboriculture.'[3] Agricultural implements were introduced and encouraged at this stage by the grants of annual subsidies or free land for experimental purposes to the Agri-Horticultural Societies in Calcutta, Bombay, Madras and other places.

The Government institutions started for the purposes were the Botanical Gardens in the different Provinces. Apart from these stray attempts the Government did not interest itself much in the agriculture of the country with the notable exception of measures for famine relief including the development of irrigation and transport facilities.

1871 to 1880.—The recommendation of the Commission appointed after the famine in 1866 about the creation of a special Department of Agriculture and the representations of the Manchester

1. For detailed information see the Reports of the Famine Commissions; Report of the Royal Commission on Agriculture in India, Report of the Agricultural Reorganisation Committee, United Provinces; Report on the Improvement of Agriculture in India by Dr. Voelcker; Russell Wright Reports; Agriculture and Animal Husbandry in India.

2. Dr. (Later Sir) Birdwood quoted by Dr. Gadgil in the Industrial Evolution of India.

3. Report of the Agricultural Reorganisation Committee p. 5.

Cotton Supply Association for taking measures for the improvement of Cotton led to the establishment of the Department of Revenue, Agriculture and Commerce of the Government of India in June 1871. It, however, failed to have any influence on agricultural improvements in the country and was finally abolished in 1878. Experimental farms were also established to demonstrate the utility of new methods and appliances. But the persons put in charge of these farms were ignorant of Indian conditions and the methods of Indian cultivator. These early attempts, therefore, proved fruitless. In the meanwhile, in 1875, first steps towards the formation of an Agriculture Department were taken in the United Provinces.

The whole question was again taken up by the Famine Commission of 1880, which instead strongly on the rival of the Department of Agriculture at the centre and on the simultaneous formation of similar organisations in the provinces entrusted with the duty of the administration of famine relief and collection of agricultural statistics. The Commission also recommended a policy to advance money to the cultivators and the appointment of special courts for debt-relief.

1881-1905.—As a result of these recommendations of the Famine Commission, Land Improvement Loans Act (XIX of 1883) and the Agriculturists' Loans Act (XII of 1884) for the grant of *taccavi* loans to the agriculturists were enacted. A separate Department of Agriculture was created at the centre, but it was clearly recognized that the main resposibility for agricultural research and experiment must fall on the Provincial Governments. Mr. (later Sir) Edward Buck was appointed as the first Secretary of the new Department and the duties of provincial agricultural departments were laid down as 'agricultural inquiry, agricultural improvement and famine relief.' A number of conferences were held during the next ten years with a view to discover the lines of development. The Imperial Department of Agriculture felt that no advance was practicable without a general inquiry into the character of the soils and agricultural conditions of the country by a first class expert. Accordingly, after much deliberations, Dr. J. A. Voelcker was sent out to India by the Secretary of State, 'to advise upon the best course to be adopted in order to apply the teachings of agricultural chemistry to Indian agriculture and to effect improvements in it.' He made an exhaustive inquiry, the results of which were published

in the form of a book on the 'Improvement of Indian Agriculture. Dr. Voelcker's visit to India was also utilized by convening an Agricultural Conference at Simla in October 1890. This conference discussed the preliminary note prepared by Dr. Voelcker and concluded that there was a great scope of the improvement of agriculture in India as to justify a sound system of scientific investigation and education. The post of agricultural chemist was created in 1892 and converted in 1901 into that of Inspector General of Agriculture for the systematic study and improvement of Indian agriculture, as well as, for the direction of the agricultural policy of government. The position of the Inspector-General was however purely advisory. The post of Imperial Mycologist was created in 1901 and that of Imperial Entomologist in 1903. But in these early attempts towards the study and introdrction of scientific agriculture in India there was not any large-scale attempt or a systematic plan to study the needs of the Indian cultivator and soils, to evolve or improve methods, implements or plants most suitable to these requirements and propagate them on the widest scale. Further it was hardly recognised that economic environment of the cultivator as a whole limited agricultural progress and prosperity and was becoming a breeding ground for many evils, which could not be uprooted simply by the use, say, of a new iron plough.

The Famine Commission of 1901 referred to some of these evils and gave the warning that 'security of the harvest only postpones the pressure of the population on the soil; it is prudence and knowledge and the practice of thrift alone which will relieve it.' It of course laid particular emphasis on the steady application to agricultural problems of expert research. It reported: 'We are, indeed, far from thinking that the Indian cultivator is ignorant of agriculture; in the mere practice of cultivation Agriculture Departments have probably much to learn from the cultivator. But in the utilization of his hereditary skill, in economy of the means of production, and in the practice of organized self help, the Indian cultivator is generally ignorant and backward. It is in correcting these deficiences that agriculture deparments will find their richest fields of labour. Without pretending to exhaust the number of subjects on which these departments may usefully employ themselves we may mention the following:—

(i) Improved agricultural teaching to the better classes.

(ii) The promotion of mutual associations; agricultural research and experiments; enquiries regarding tillage and manure; the investigation of crop diseases and their remedies.

(iii) The provision of improved seed.

(iv) The experimental introduction of new staples.

(v) The improvement of cattle-breeding; the investigation of cattle diseases; and the development of the fodder supply.'

The Government tried to implement these recommendations, particularly after the year 1905, by adopting a definite policy for the improvement of agriculture in the country. The Co-operative Credit Societies Act was put on the statute book in 1904 and considerable expansion took place in the Imperial and Provincial Departments of Agriculture for bringing science to the aid of the Indian cultivator. Till then, however, as the Royal Commission on Agriculture in India recorded, the Government of India had 'enjoined on agricultural departments the duty of organising famine relief. The gist of their orders was, in fact, that scientific inquiry and research in the laboratory and in the field on agricultural matters must be deferred until the statistical inquirees were complete and until the facts so obtained had been analysed for the purpose of securing the greatest possible measure of protection against famine.....The grim spectre of famine was before them and it was to combat this that all their plans and policies were directed.'[1] Spasmodic efforts however were going on in the different provinces for evolving new methods, implements and plants for the improvement of agriculture. The U. P. Agricultural Reorganisation Committee, for instance, found that, 'If old records are ever unearthed and the annals of the Botanical Gardens are written, they will be found replete with the heroic efforts of Dr. Forbes, Royle, Dr. Falconer, Dr. Jameson and Mr. Duthie, extending over a period of about 75 years. The flora of the Province and the Himalyas, was investigated always at great personal inconvenience and often at great risk. Any country would be rightly proud of such pioneering work.'[2] The introduction of new crops such as groundnut in Burma and Madras, potatoes in Assam and in the Kumaon Hills, and American cotton in Bombay and the United Provinces was due to the early efforts of the provincial departments of agriculture.

1. Report p. 20-21.
2. Report p. 5.

The Pusa Research Institute:—The Government of Lord Curzon tried to implement the recommendations of the Famine Commission regarding agricultural research and experiments by adopting a policy of organised agricultural research in the country. The handsome donation of Mr. Phipps facilitated the establishment in 1904 of a research station with fully equipped laboratories, an exprimental farm, an agricultural college for the training of students and a cattle farm for the improvement of the local breeds of cattle at Pusa, where a large Government estate had been placed for the purpose at the disposal of the Government of India by the Bengal Government. All the agricultural scientists of the Government of India were brought together at this institute for which a Director was appointed in 1905 and some more scientists[1] were added. It was expected that at the experimental farm lines of enquiry would be initiated, varieties of crops would be tested and improved, seed of improved varieties would be grown and distributed, and practical training would be given to students at the Imperial Agricultural College, besides securiug continuity in experiments. It was expected to be a model for the provincial exprimental farms. The aim of the College was to provide further facilities for agricultural education and a higher course of training for those who had studied in the provincial colleges and schools. But Pusa failed to satisfy these early anticipations. The Royal Commission of Agriculture therefore recommended its complete overhaul and the establishment of an Imperial Council of Agricultural Research. Under the new arrangements the Institute was transferred to New Delhi in September 1936.

The Imperial Department of Agriculture:—The post of Inspector General of Agriculture was abolished in 1911 and a new post of Agricultural Adviser was created with which was combined the directorship of the Research Institute. A Sugar Bureau was formed in 1919 for studying the problems of sugarcane production and sugar industry. Besides, the Institute of Animal Husbandry and Dairying at Banglore, the cattle breeding and dairy farms at Karnal, Banglore and Wellington, the creamery at Anand and Sugarcane Breeding station at Coimbatore were also under the administration

1. The new posts that were created were those of an agri-horticulturist (subsequently designated Imperial Agriculturist), a biological botanist (subsequently designated Imperial Economic Botanist) an agricultural bacteriologist and a supernume-

of the Agricultural Adviser in addition to the Imperial Institute of Veterinary Research at Muktesar. In accordance with the recommendations of the Royal Commission of Agriculture, administrative and other changes were introduced, which we shall have occasion to review in a later section.

The Indian Central Cotton Committee:—The Indian Central Cotton Committee was constituted in 1921 on the recommendation of the Indian Cotton Committee of 1917-18. The Committee was charged with the improvement of cotton cultivation in the country. The Committee consisted of the representatives of all interests from the grower to the manufacturer and the Agricultural Adviser was its *ex-officio* president.

Provincial Departments of Agriculture.—Agricultural departments were started in the provinces much before the issue was brought to the forefront by the Famine Commission of 1901. But they were generally burdened with such onerous duties until 1905 that they could spare little time for real scientific investigation. they had neither the trained staff nor the organisation to carry into effect even their own recommendations. The Government of India decided in 1905 to set aside annually a sum of Rs. 20 lakhs, subsequently increased to Rs. 24 lakhs, for the development of agricultural research, experiment, demonstration and education in the provinces. The aim was the establishment of agricultural colleges for research and instruction, experimental farms in each agricultural sub-region for carrying out tests under local conditions for an area, and demonstration farms to carry results of research to the farmer. The provincial departments developed along these lines after 1905 and agricultural colleges were started or reorganised at Poona, Cawnpore, Nagpur, Lyallpur, Coimbatore and Mandlay. Under the scheme of reorganisation a number of scientific experts[1] were added presumably to solve specific problems. But as later examination of their work has revealed, they failed to produce results of practical utility as they had little knowledge either of agricultural conditions or of the economics of agriculture in India.

1. The colleges or the provincial departments generally created the posts of an agriculturist, agricultural chemist and economic botanist, other experts such as entomologists, mycologists, bacteriologists, soil physicists, crop specialists and agricultural engineers.

The newly organised provincial departments organised experimental, seed and demonstration farms in the various circles in their provinces. They were also charged with the duty of distributing improved seed and implements and doing general propaganda for the adoption of improved method of cultivation. Large number of seed stores and demonstration plots were organised for the purpose. To co-ordinate the activities of the provincial departments an all-India Board of Agriculture was also founded in 1905.

Reforms of 1919:—Under the constitutional changes of 1919 the administration of all the departments concerned with rural welfare and agriculture was transferred to the Governors acting with Ministers. The provinces adopted a policy of expansion and modification of their departments to suit local conditions. In a way it was good; and as the Royal Commission has recorded, 'when hostilities ceased, much leeway had to be made up and the year 1920 may be said to mark a new starting point in the history of the agricultural departments in India both on that ground and on account of the constitutional changes which followed the passing of the Government of India Act of 1919'. But there has been the other side as well, there was no uniformity in the agricultural policy followed in the different provinces; in fact they had no definite policy and any measures were adopted which were necessary to appease the agitating individuals in the legislative bodies and to secure their votes[1]. Since the Reforms, the Imperial Government is concerned only with agricultural problems of all-India importance.

Royal Commision on Agriculture:—The appointment of a Royal Commission on Agriculture in April 1926 marks a turning point in the history of the development of scientific agriculture in India. Its appointment definitely indicates that agricultural policy was taking a new form. It was no longer the policy of an absentee landlord directed to measures of regular realisation of revenues, as it had been in the early days of the East India Company; or that of a merchant concerned only with finding and collecting goods for sale as was the case almost throughout the nineteenth centry; or that of an unstable Government interested primarily in strengthening its own hold by safeguarding itself against the principal disturbing factors such as famine in India, as it had been after the

1. See Report of the U. P. Agricultural Re-organisation Committee p. 9.

Mutiny in the nineteeth century; or that of an ignorant child having a simple faith in scientific experts of a distant country unfamiliar with our own conditions to do miracles, as has been the case in the first few decades of the present century. It was for the first time that the Government recognised the necessity of laying down the foundations of a broad and long-range agricultural policy to promote the welfare and prosperity of the rural population. The Commission was therefore required to examine and report on the conditions of agricultural and rural economy. In particular, it was to investigate (*a*) the measures adopted for the improvement of agriculture including scientific research, experiments, education and demonstration; (*b*) transport and marketing facilities; (*c*) system of agricultural credit; and (*d*) factors affecting rural prosperity and welfare and to make recommendations on these subjects.....The Commission submitted a very comprehensive report in April 1928. The recommendations of the Commission have since then largely guided the actions of the government concerning agricultural matters and formed in general the basis of its policy. Some of the steps thus taken concerning particular aspects of agrirultural problem have already been reviewed in previous chapters. We shall be reviewing briefly in the following section some of its other most important recommendations of a general character.

The Commission laid special emphasis on the improvement of village life in all directions as the first and essential step in a comprehensive policy designed to promote the prosperity of the whole population and to enhance the national income at the source. They recorded that the necessity of a concerted effort to improve the general conditions of the country-side was not fully appreciated by the Government. If, however, 'the inertia of centuries is to be overcome, it is essential that all the resources at the disposal of the state, should be brought to bear on the problem of rural uplift. What is required is an organised and sustained effort by all those departments whose activities touch the lives and the surroundings of the rural population' (Royal Commission on Agriculture).

Dealing with particular matters, the Royal Commission recommended with reference to the organisation of agricultural research, the establishment of an Imperial Council of Agricultural Research to promote, guide and co-ordinate agricultural (including veterinary) research in India and to link it with agricultural research in

other parts of the British Empire and in foreign countries. In the major provinces, they suggested the constitution of provincial committees to work in close co-operation with the Council. Their recommendations in respect of demonstration and propaganda were on the whole in favour of demonstration plots rather than demonstration farms, which might be necesrary for special purposes only. Propaganda should be linked with actual demonstration of results.

Government Action on The Report:—The Agricultural Conference, consisting of provincial representatives, which met at Simla in October 1928, found that the immediate or simultaneous adoption of the Commission's proposals was mainly limited by financial considerations. It is a strange irony that whenever a provincial or Central Government in India is apparently eager to promote economic or educational development it is always handicapped by lack of funds. In 1927 the total expenditure incurred by the Imperial and Provincial Departments of Agriculture amounted to only 9 pies per acre of the cultivated area and 8 pies per head of population in British India. The measures suggested by the Royal Commission couldn't of course be carried out within the iron frame work of such nominal expenses. At the same time the Government lacked vision of discovering the wide scope for enlarging its expenditure to these minimum requirements. Nonetheless, the Report of the Royal Commission was accepted as the basis of the future agricultural policy. The progressive application of the recommendation of the Commission as circumstances might permit was to be the criterion for state action. But the Conference recommended the immediate setting up of the Imperial Research Council.

The Imperial Council of Agricultural Research:—In constituting the Council, the Government of India was not wholly guided by the recommendations of the Commission. The Government decided that the Council would consist of two parts *i.e.* a Governing Body in charge of admintstration and funds and an Advisory Board to examine and report on all proposals in connection with the scientific objects of the Council. The Governing Body consists of the member concerned of the Viceroy's Executive Council as Chairman, the Principal Administrative Officer of the Council as Vice-Chairman, three representatives of the Indian legislature, two representatives of Commerce and Industry, the Provincial

Ministers of Agriculture, two members elected by the Advisory Board, the Secretary in charge of the department, the Financial Adviser I.C.A.R. and such other persons as may be appointed by the Governor-General-in-Council. The Advisory Board is presided over by the principal Administrative officer of the Council and consists of two whole time officers and a number of nominated and elected scientific members representing the research institutes, universities, Provincial Agricultural and Veterinary Departments, co-operative societies etc.

A lump sum grant of Rs. 25 lakhs of which Rs. 15 lakhs were paid in 1929-30 was made by the Government of India to meet the costs of the establishment of the Council. In addition there is fixed minimum annual grant of Rs. 7·25 lakhs (Rs. 5 lakhs for the furtherance of the scientific objects of the Council and Rs. 2·25 lakhs for administrative expenditure) to meet the annual expenditure. The Council has complete freedom to disburse its scientific grant in any way it decides for the furtherance of its scientific objects. Many Indian states have also made contributions to the funds of the Council. Whereas originally the Secretariat of the Council was constituted a Department of the Government of India, it is connected since January 15, 1939 through the Department of Education, Health and Lands and through the two expert officers of the Council designated as Agricultural Commissioner and Animal Husbandry Commissioner with the Government of India respectively. The finances of the Council have been improved further by the enactment of the Agricultural Produce Cess Act 1940, whereby a cess of ½ per cent *advalorem* on a number of commodities[1] has been levied to finance the general researeh programme of the Council. The proceeds of the cess are expected to yield about Rs. 14 lakhs annually. The administrative expenses and cost of sugarcane research and work in relation to the organisation of marketing continue to be financed from the Central Revenues as before. The step has placed the finances of the Council on an independent footing and is therefore in right direction.

The Council has been registered under the Registration of Societies Act (1860) and functions primarily to promote, guide

1. These Commodities are bones, bristles, butter, cereals other than rice and wheat, drugs, fibre for brushes,, fish, fruit, ghee hides (raw), manures, oil-cakes, pulses, seeds, skins (raw), spices, unmanufactured tobacco, vegetables, wheat, wheat flour, and wool (raw).

and co-ordinate agricultural research throughout India. In general, it does not itself undertake investigations although there have been exceptions to this rule in two directions *i.e.*, costs of production of crops and the statistical control of agricultural experiments. It is primarily a body to which the imperial and provincial departments of agriculture look for help and guidance in matters of scientific research. It promotes research in the first instance by approving and financing after careful examination the research schemes submitted to it. The Governing Body decided in 1937 that provincial contributions to research schemes should be fifty per cent of the total cost unless there were adequate reasons to the contrary. The decision has provided a workable objective criterion for the allocation of costs as between the Council and the provincial governments. The Council thus acts as a clearing house of information in regard to agricultural and veterinary matters, directs scientific research into proper channels, co-ordinates such work in the various parts of the country, promotes it through financial grants linking it with that in other parts of the Empire [1] and in foreign countries, and finally acts as a brain trust by initiating its own research schemes. It goes beyond that by taking the fruit of science to villages by adopting schemes of application by farmers or on demonstration farms the results of researches under expert guidance. In addition, the Council publishes a number of Journals, monographs, bulletins, etc. which not only help the progressive farmers, whose number in the country is unfortunately very small, about latest improvements but make substantial contribution to the spread of scientific farming and knowledge. Another useful acticity is the maintenance of a research and reference library at Delhi.

The Governing Body meets once a year and has, as already stated, control of the Council's funds. It is the final sanctioning authority and the decisions of the Advisory Board are subject to its decision. All research schemes are first considered by the Advisory Board, which meets twice a year and submitted to the Governing body for approval. Schemes for research may be submitted by Provincial Governments, universities or private institutions and the Advisory body decides which of them ought to be taken

1. The Council's headquaters at Simla are linked up with the Imperial Agricultural Bureau, which keeps the research workers in all parts of the British Empire informed about the latest developments in their respective spheres.

up, how each problem is to be dealt, and in what part of the country can it best be dealt. As a matter of fact the business of the Advisory Board is continuous throughout a year but is carried by special committees constituted for various duties. The Council has thus a number of standing committees at work, the more important being the Wheat, Sugar, Rice, Animal Naturition, Cattle Breeding, Dairying, Fertilizers, Locust, Soil Science, Dry Farming Co-ordination, Oil-Crushing Industry, the Fodder and Grazing Standing Committees. There is also a Joint Committee of the Imperial Council of Agricultural Research and the Indian Central Cotton Committee. The principal whole-time officers of the Council are the Vice-Chairman and Principal Administrative Officers, the Secretary, the Agricultural Commissioner with the Government of India, the Animal Husbandry Commissioner with the Government of India, the Agricultural Marketing Adviser, the Director, Imperial Institute of Sugar Technology, Cawnpore, the Statistician, the Officer-in-Charge, Animal Husbandry Bureau and the Editor, Council's Journal.

Imperial Agricultural Research Institute, New Delhi:—An organisation parallel to the Council but not directly connected with it is the Research Institute at Delhi, maintained by the Government of India for carrying out investigations of fundamental importance to Indian agriculture. It is a direct continuation of the Pusa Institute, but vastly improved due to its reorganisation and transfer to New Delhi after the destruction of the Pusa laboratories by earthquake in January 1934. The purpose of the Institute is to take work of all-India application from the various Provincial Departments of Agriculture for which they have neither the time nor the staff. Its activities fall mainly into three groups *viz.* (*a*) standardisation of methods for other stations to use, (*b*) collections of insects, fungi, soils, varieties of crops etc. and (*c*) investigation of agricultural scientific problems which seem to be near to practical application. In view of the fact that the activities of the Institute have little practical utility and in certain cases involve even duplication as well as the new role of the Council to act as a brain trust, it is more desirable that its control be transferred to the former (*i.e.* Council). The Imperial Council will thus be in a position to have a research station of its own, where such of its own directly initiated schemes of all-India importance as it may consider necessary may be worked out. Sir John Russell's recommendation in

respect of a close association between the Council and the Institute was well-timed. Such reorganisation will be in the right direction.

Imperial Institute of Sugar Technology.—The acceptance of a recommendation of the Indian Sugar Committee of 1920 led to the establishment of the Imperial Institute of Sugar Technology sixteen years later on 1st October 1936. It carries out research and trains students in all branches of Sugar Technology. It also tries to render technical help to factories by giving them advice on various matters, investigating special problems and undertaking analytical work. Its Advisory Board is presided over by the Vice-Chairman, Imperial Council of Agricultural Research which maintains it but for which the Council receives a special grant. Similar co-ordination and development in respect of other industries depending on agricultural products is very much needed.

Provincial Agricultural Research Committees.—The Royal Commission on Agriculture had emphasised the need of provincial committees to work in close co-operation with the Council and in particular to prepare programmes of research to be laid before the latter and to report on applications from within a province for grants from the Council for carrying on research. Such committees have since been constituted. Their contribution is not uniform in all the provinces and while certain committees have proved useful, others are not active to the same extent. It appears that there is a great scope of reorganisation in this respect in some provinces.

Russell-Wright Enquiry:—The grants made by the Imperial Council of Agricultural Research led to considerable extension and widening of scientific investigations in the field of [illegible]. In so far as the results of these researches have been of practical utility the Council has justified its establishment. But the poverty of Indian agriculture and soils as a whole in the background of the potentialities for their development and the almost negligible progress towards scientific farming in the country make the achievements of the Council look like microscopic objects and painfully remind us of how much more ought to have been done. There were perhaps financial limitations in its way but that hardly consoles us, particularly when we look at the great victories of Science over Nature in other countries, which enabled them to solve their economic problems with amazing rapidity. Agriculture in India

suffers almost as much to-day from lack of scientific investigation and research as it did when the Royal Commission recommended establishment of the Council.

Yet, it does not mean that the Council has belied all early expectations. On the contrary, reports of Sir John Russell and Dr. N. C. Wright, the two experts,[1] invited in the year 1936-37 for a scientific stock-taking of the research activities of the Council in pursuance of the recommendation of the Royal Commission for a periodical review of its work by an independent authority, are filled with admiration of its work. Sir John Russell, who reviewed the Council's work in connection with crop production records that a vast amount of pioneering work extending over a wide range has been accomplished.[2] He however points out that it may be laid down as a broad principle that the investigations fostered by the Council should be for the express purpose of improving agriculture. As such, the accumulation of more knowledge is not so urgent as to bridge the gulf separating the agricultural experiment stations from the peasants. But it is a question of relative urgency only for there is considerable amount of work to be done in the laboratory and at the experiment station. Sir John has emphasised that 'Agriculture in India is not merely an industry but the mode of life of a large part of the population. The scope of the Council's work must therefore be much wider than if the subject were purely a branch of technology.

'It is not sufficient for the results of the research work simply to be published in the Council Journal; the Council should have powers to undertake the much more difficult task of arranging for them to be put into practice. The Council should also act as a Development Commission, stimulating extension work by the Departments and commercial exploitation of useful discoveries.' The idea of expanding the Council into a Development Commission as well on lines of the British Development Commission had also attracted the Royal Commission on Agriculture. Certainly, if science is to be a handmaid of agriculture application of its results by

1. Sir John Russell, D. Sc., F. R. S., was Director of Rothamsted Experimental Station and Dr. N. C. Wright was Director of the Hannah Dairy Institute Ayrshire.

2. Report p. 222.

farmers is as much necessary as the achievements of those results by Scientists. It is therefore gratifying to note that since 1942 the Council has changed its method of work so as to include this aspect of the agricultural problem within its purview. But it still lacks the compelling force for the application of science to agriculture.

Referring to crop-production Sir John suggests that investigation on food crops should be made in conjunction with the human nutrition experts and efforts should be made to increase the output per acre with a view both of ensuring full supplies and of liberating land for the growth of supplementary crops and of fodder crops for the production of milk. 'This increased productiveness is the main problem to which all others should be subordinated'.[1] For cash crops he has emphasised the necessity of investigation to be done in close association with expert users and buyers of the crops.

Commenting on the methods of increasing the output from the land Sir John has recommended better organisation for the distribution of seed of improved varieties, better control of pests and diseases, improvement of water supply for crops including the establishment of a Central Irrigation Station, and conservation of soil fertility through prevention of erosion and manuring. He has rightly pointed ont the need of setting up committees for soil conservation and crop production. The latter committee would consider cropping schemes much on the lines adopted by the Crop Planning Conference (1934) to advise desirable extensions or curtailments of areas under particular crops, and to organise watching services to report on the incidence of insect and fungus pests etc.

Finally, he has pointed out that 'efforts to improve agriculture are likely to be unavailing unless the villages are improved and made fit for good cultivators to live in.' If more educated men and women settle on the land their good influence would be out of all proportion to their number.

The financial implications of his recommendations were fully realized by Sir John Russell. He admitted that his recommenda-

1. Report *op. cit.* p. 223.

tions if carried into effect will necessitate an increase in the grant made to the Council. But there is no alternative. "The Council is the co-ordinating agency', he adds, 'which provides invaluable assistance to the Provincial Agricultural Departments and it will afford still greater help if it is given the wider developmental powers that will enable it to bring to fruition investigations which at present stop at the experimental stage. These Departments between them spend over 200 lakhs of rupees annually, a a large sum and yet it amounts to little more than 1 anna per acre sown. The Council's regular grant of 5 lakhs is augumented for various purposes but its income is in my view inadequate for its important duties, and the need for addition to its resources should be recognised, at any rate for the next few years, if progress is to be made as rapid as desired.' [1] The Government too has recognised this necessity and as already pointed out finances of the Council have been placed on more sound footing by levying a cess under the Agricultural Produce Cess Act, 1940. The Provincial Governments have also increased their expenditure under the agricultural head. The extent of this very well-advised improvement may be judged from the following figures:—

Expenditure on the Departments of Agriculture as reported by Sir John Russell for 1936-37 from the provincial budget estimates.

Province.	Total area sown Million acres	Expenditure Agricultural Department. Lakhs of Rs.	Expenditure on Agriculture proper. Lakhs of Rs.	Expenditure per 100 acres sown. Rs.	Expenditure per 100 persons Rs.
Assam	6·7	8·12	3·70	5 5	9·4
Madras	37·5	41·75	19·87	5·3	8·9
Punjab	29·8	28 52	28·52	9·6	12 1
Bengal	27·9	25·65	8·61	3·1	5·2
U. P.	43·4	36·70	23·88	5·5	7·9
Bombay	34·1	22·46	11·03	3·2	10·9
C. P. ..	27·5	9·42	8·41	3·1	6·1

1. Report p. 233.

Expenditure on the Provincial Departments of Agriculture.
Budget Estimate for 1944-45.

Province.	Total cultivated Area. Million acres.	Expenditure on Agriculture.		
		Total. Lakhs of Rs.	per 100 acres. Rs.	Per 100 persons. Rs.
Assam	7·67	28·24	36·7	27·6
Madras	37·36	46·37	12·4	9·4
Punjab	32·80	76·02	20·1	26·4
Bengal	30 03	130 62	43·5	21·7
U. P.	44·26	68·17	15·4	12·3
Bombay	29·80	102·44	38·4	49·2
C. P.	26·88	20·66	7·6	12 3

But the situation in this respect is still far from satisfactory not only in individual provinces but in the country as a whole. Agricultural progress in the country will continue to be handicapped as long as the power of the purse, the greatest of all powers in a modern State, remains as weak as at present.[1] The Indian farmer should search in the first instance the pockets of the Finance Member for a key to the solution of his main problems rather than interrogate anybody else and beat about the bush.

While Sir John Russell was reviewing the progress in applying science to crop-production, Dr. N. C. Wright arrived for a similar mission in connection with the cattle and dairy industries. He submitted his report in July 1937. Analysing the current position, he emphasized the necessity of at least doubling the output of milk, which was estimated between 700 and 800 million *maunds* of milk, annually giving 7 to 8 ozs only as the average daily *per capita* consumption of milk and milk products. The total annual value of India's live-stock iudustry was estimated at over Rs. 1,000 crores.[1]

1. For contrast compare the approximate direct expenditure on agriculture per head of population in some foreign countries. Roughly it is Rs. 12·45 in the U. S. S. R., Rs. 12·37 in the U. S. A.; Rs. 9·6 in Ireland; Rs. 2·79 in Norway; and Rs. 2·46 in Great Britain.

2. Milk and milk-products valued at Rs. 300 crores, hides and skins at Rs. 40 crores, cattle labour at Rs. 300 to Rs. 500 crores and manure at about Rs. 270 crores.

The present contribution due to the rise in the prices may be in the vicinity of Rs. 2,000 crores.

Dr. Wright recommended considerable reorganisation and development of research, education and advisory services. The recommendations included reconstitution of the Bangalore Institute as Imperial Dairy Research Institute at a more suitable centre, extension of the Anand Creamery, improvement in training for the I. D. D., and establishment of Provincial advisory services for dairy industry including appointment of Dairy Development officers in each province. He also advocated a greater use of experimental and demonstration farms so as to make them valuable nuclei for the breeding and distribution of pedigree milking stock and proper centres for a study of mixed-farming methods. Suitable rations for Indian cattle should be worked out at Lyallpur, Dacca, Coimbatore and Izatnagar centres while deficiency diseases should be studied more systematically. An animal Geneticist should deal with problems of breeding and genetical research should receive more attention.

Dealing with administration, Dr. Wright has laid proper emphasis on unification of live-stock improvement and veterinary work under a single department of animal husbandry in each province. There should be Live-stock Expert in this department, and a fodder specialist in the Department of Agriculture, working in close touch with the former.

But further cattle improvement cannot be effected without increased expenditure, The Royal Commission deplored that in 1926 there was only one Veterinary Assistant to every 100,000 head of cattle while the minimum requirement was one assistant to every 25,000 head. When Dr. Wright reported he found one Veterinary assistant to every 86,500 head of cattle and the minimum standard laid down by the Royal Commission was approached by two provinces only, *viz*, the North-West Frontier Province and the Punjab. The expenditure on Veterinary services and live-stock improvement per head of cattle varied from 3·3 pies in the United Provinces to 4·2 pies in Bengal, 5·1 pies in Behar, 6·7 pies in the Central Provinces, about 8 pies in Madras and Assam, 9·1 pies in Bombay, 16·3 pies in the Punjab and 23·8 pies in the N. W. F. Province. There was a significant co-relation in the number of pedigree and approved bulls at stud and the number of castrations performed on the one

side and this expenditure on the other. The need for increased expenditure in this respect is no less great than on agriculture.

No effort should be spared to develop milking potentialities of indigenous Indian breeds of cattle. Dr. Wright has suggested in this connection the multiplication of such agencies as Military Dairy Farms, District and Demonstration farms, *Gowshalas* and *Pinjrapoles* so that the results of a constructive breeding policy and better management of cattle be demonstrated effectively to farmers. He has also suggested the appointment of a special officer under the Imperial Council of Agricultural Research for stimulating interest and giving advice in the matter.

Finally, 'in order to maintain close co-operation between all departments concerned with rural development', suggested the Report,[1] 'a Board of Rural Development should be constituted in each province. The Board would include the directors of the departments of agriculture, forestry, veterinary services and public health, a representative of the irrigation and revenue departments, and the Registrar of Co-operative Societies. Specialist officers would attend the meetings of the Board. The Chairman would be a non-technical officer of the rank of Commissioner and with a special knowledge of and interest in rural conditions. The Board would act solely as a co-ordinating and advisory body, but would be in a position to make direct representations to the responsible Minister in regard to any controversial matters'.

Rural Development.—The need of concerted effort for village uplift had also been emphasized by the Royal Commission holding it to be the duty of the State to initiate a combined movement for the betterment of the rural population expressing their faith in the revival of corporate life in villages. The cue has been apparently taken since then by the provincial Governments and for some time atleast their rural development activities were as prominent as any other. These were mainly in two directions *viz.*, organisation of better living societies and co-ordination of the work of the different development departments touching the lives and surroundings of the rural population through the newly constituted village uplift, reconstruction or development Boards or committees. These vain

1. Report on the Development of the Cattle and Dairy Industries of India by Norman C. Wright M.A., D.Sc., Ph.D.

efforts seem to have proceeded on the assumption that the cultivator lacks the desire for better living and, 'What is required is to increase in desirable directions the number of the villager's wants and to show him how to satisfy them by his own efforts,[1]. In other words, the treatment has been based on the general acceptance of a diagnosis best expressed in the following words of Mr. W. H. Moreland; "It may be affirmed with confidence that the welfare and prosperity of the rural population will not come by technical advances alone ; if it is true that better living can be secured only by a combination of better farming and better business, it is equally true that the will to live better must furnish the driving power that is required; at the heart of the problem lies the development of the desire for a higher standard of living.....A vague aspiration now exists, and, I suspect, always has existed, but it is rendered ineffective by an inhibition, which has to be broken up before large scale progress is possible. In other words, the central problem is now psychological, not technical.....The will to live better must furnish the driving power without which improvements in agriculture and commerce will not give an adequate return. The dominant feature of rural India at the present day is that the will to live better is not a force to be reckoned with, except in particular circumstances." Fortunately, such wishful thinking, after having already delayed the material advancement of village communities in India for long does not guide public opinion to the same extent to-day as it did before Provincial Governments had launched their village uplift programmes. It is not suggested that improvement of amenities in villages is not urgently needed, but speaking relatively, the problem of adding to the real income of the cultivator is more urgent than any other. It is the complexity and magnitude of this latter problem which subordinates all others. Nevertheless, the Royal Commission agreed with Mr. Moreland's diagnosis and while he prescribed mass education in the widest sense as the main remedy, they were of opinion that what was called for was guidance and leadership for that purpose. The problem seemed to admit of a simple solution *viz.*, find and install leaders in villages, for these did not contain any of their own leaders corresponding to the squire, the doctor or the parson in England. The Royal Commission was therefore naturally attracted by the system of village guides devised by Mr, F. L. Brayne.

1. Royal Commission on Agriculture in India.

Gurgaon Experiment.[1]—Mr. Brayne's scheme for village uplift, (which he applied at Gurgaon, while he was the Deputy Commissioner of that district), centres round village guides. The idea was to make some one individual in the village so enlightened that others might go to him with confidence for direction whenever they need such help, young farmers were carefully selected and given a special training designed to acquaint them with the principles of sanitation, elementary medical aid, co-operation, agricultural improvement, subsidiary and simpler home industries, etc., so that after their training they might act as 'guide, philosopher and friend' on return to their villages. These village guides were not of course trained as scientists or specialists but their knowledge was meant to enable them to direct villagers as to how to obtain advice in technical matters. Their course was designed to imbue them with a sense of the dignity of corporate labour so that they might revive it for mutual benefit in their villages. But since village guides alone would be liable in course of time to lapse into inactivity some organisation behind them was required to strengthen their efforts, develop public spirit and maintain a never-ceasing flow of suitable material and new ideas for the improvement of village life. The scheme adopted at Gurgaon by Mr. Brayne tried to fulfil this need by embracing the work of every department coming in contact with the rural areas. To describe its working in the words the Royal Commission,[1] 'it seeks to assist in securing the adoption of the advice of the expert by a well-planned propaganda campaign ; it depends for its success on the enlistment, in the cause, of every one willing and able to assist, official or non-official, and more especially of the people themselves whose welfare is in the balance. Lecture, song, drama, magic lantern, cinema, and even the loud-speaker are made to contribute what they can to arouse the people to a realisation that they themselves are largely responsible for their own undesirable condition. The attention of the villagers is thus attracted ; their every action is challenged by its effect on their prosperity or poverty ; the economic and social consequences of their neglect and omissions are stressed in vigorous

1. Mr. Brayne has given detailed account of his method in his books: "Village Uplift in India": "The Remaking of Village India"; "Socrates in an Indian Village" ; "Socrates Persists in India" : "Better Villages".

For Criticism see M. L. Darling "Rusticus Loquitur".

1. Report para. 424.

language, and advice is tendered in words calculated to sting every one into activity side by side with the propaganda campaign, there are provided facilities for those who wish to try the advice so tendered. Good seed, selected bulls, ploughs, well-gear, quinine, inoculation, and so on, are readily available. Co-operative Societies, adult schools, domestic economy classes and every other means calculated, to assist the spirit of service and self-help are at hand.'

The scheme, although it achieved some progress in many directions with the help of official pressure failed to make lasting contributions to the cause of village uplift. Some of its main defects were insufficient attention to details, introductions of changes without caring to ascertain their full and practical significance ; disregard of the diversity of local conditions ; reliance for leadership on 'hurrielly selected', 'insufficiently trained' and 'inadequately supervised' *raw* persons who failed to command any influence with the villagers ; substitution of pressure for persuasion and education ; and planning by an individual rather than by a permanent organisation. As a matter of fact the whole idea of village guides is fundamentally incorrect as by implication it assumes that there is a synthetic substitute for education as well. Where the villager ought to have started with education he was given ignorant guides and, naturally enough, he got no-where.

Co-operation and Rural Reconstruction.—Leaving aside the Gurgaon experiment, the Government has relied largely on co-operation for economic, social and educational development in villages.[1] In this respect too the Punjab has the credit of taking the lead in organisation of Better Living Societies. There is only a small entrance fee in such societies and violation of rules is made punishable with fine under the bye-laws. Functioning primarily for restriction of expenditure on social ceremonies these societies have made their own contribution in the programme of village uplift by making village roads, clearing village sites, improving sanitation,

1. In Europe, 'the rural co-operative society is seen not only as a factor in technical progress and material well-being, it is seen also to be an instrument of economic organisation of vocational training and discipline, centre of spiritual life and general education, a cell in the new social tissue which is re-establishing or carrying on that vital, solid cohesion and systematic collective defence which family feeling, neighbourliness and the tradition of mutual help kept alive in the old village communities' (*See* "Co-operative Action in Rural Life" (League of Nations) page 31.

housing and water supply for drinking purposes, and by stopping waste on farms. In a way, these act as nuclei of social progress, provide better amenities in villages and prepare ground for the economic progress of rural population. In the Punjab, there are more than 300 such societies, and the United Provinces with several thousands of these has now stolen a march over it in this respect. The movemcnt has been making headway in Bengal as well ; elsewhere, it is not of any considerable importance.

It has already been noted that co-operative movement in the country, in spite of being primarily or mainly agricultural. has been confined to credit alone. Obviously, co-operation *is not* rural reconstruction in India. It is not yet in its proper role as an agency for rural development in the widest sense.

Recent Schemes of Rural Reconstruction[1].—Interest of the Provincial Governments was flared up in 1935-36 by the announcement of a grant of Rs. 1 crore by the Government of India for distribution to the provinces to be spent on schemes for the economic development and improvement of rural areas. This interest was further stimulated by the coming of popular Ministries into power since 1937. These were pledged to a programme of amelioration of village conditions and hence seized the earliest opportunity to overhaul and co-ordinate rural development work, the machinery for which had already come into existence in a number of provinces. In the Punjab a Central Rural Community Board consisting mainly of officials had been functioning since 1925. It was llnked with District Rural Committee Councils, bodies of non-officials, which aimed at co-ordination of propaganda work and were assisted by the different Government departments. Since 1933, a Rural Reconstruction Commissioner had also been appointed to bridge the gaps in the work of co-ordination. Similarly, in the Central Provinces a Village Uplift Board was constituted in 1932 to provide apex for a pyramidal structure at the base of which were local committees with district organisations in the centre. In Bombay a Village Improvement Scheme, aiming at co-ordination of the activities of the several agencies and departments concerned with rural improvement was adopted in 1933. The centre of Co-ordination was the District Rural Uplift Committee in a district to which were affiliated Taluka Committees. With the same object

1. *See* Review of the Co-operative Movement in India.

in view a Rural Development Board was constituted in 1935 in the United Provinces and Rural Development Officer was appointed. In the districts Rural Development Associations were organised and in each district a District Development Officer was appointed. The Bihar Village Welfare was put into operation in 1936. In brief, when the elected Ministries took charge of provincial administrations, machinery for the co-ordination of work of the different development departments was already in operation. They made extensions and improvements in these in their own way to secure a better co-ordination of rural development work.

Co-ordination of such work has been achieved by setting up in many[1] provinces and States of Provincial or State rural development or village uplift Boards consisting of the heads of the departments connected with rural development and some prominent non-official members. A few provinces like Bengal, Bihar and the United Provinces have also constituted Rural Development Departments while in some such as Bombay and the Punjab the work of rural development has been assigned to the Registrar of Co-operative Societies[2] The actual working units are in the districts or villages such as Union Boards in Bengal and district Rural Development Boards consisting of officials and non-officials in Bombay, the United Provinces and the Central Provinces. In Madras, the work is carried on by the District Boards through the rural development committees elected from amongst their own members. In certain cases village *panchayats* have also been revived besides the organisation of Better Living Societies. The Government also provides funds for small works of local importance.

The method of work is usually the organisation of rural reconstruction centres for intensive work in selected areas so that these may act like lighthouses. The work of development, to be very brief, relates to the encouragement of rural industries, improvement of village communication, sanitation and water supply, organisation of village *panchayats*, education recreation and medical aid, agricultural improvements etc. To have a better idea of rural reconstruction activities a detailed account is given in the next para of the rural development work in the United Provinces as such work has been more or less similar in the different provinces.

1. Such as Bihar, Bombay, the United Provinces, the C. P. and Hyderabad.

2. In Bombay the Registrar of Co-operative Societies has also been designated as the Director of Rural Development.

Rural Development in the United Provinces.[1]—A comprehensive scheme of rural development was adopted in the year 1935. It was to be carried out by a special temporary staff in each district consisting of six organisers and one inspector and work was concentrated on 72 villages in each district which were divided into 6 circles of 12 villages each. A sum of at least Rs. 5,000 at an average had been placed at the disposal of the 45 district officers, (who were appointed as chairmen of the District Development Associations,) for the execution of minor local works of public utility. In the selected villages, local associations, *panchayats* or better living societies were organised and activities of such departments as irrigation, agriculture, public health, industries, co-operation etc. were co-ordinated. The total sum allotted for work was Rs. 4,00,000 each year of which Rs. 1,66,000 were spent in salaries of the additional staff. But the work inspired little interest and being limited to 72 villages in each district the scheme was of little significance for the rural population of the province living in some 105,000 villages. The Congress Ministry in 1937 decided to quicken its pace so as to include every village within five years. The number of villages for concentrated work in a district was increased from 72 to 300 grouped into 20 centres, and each centre was put under the charge of an organizer, working under the direction of an inspector. Divisional Superintendents were appointed in each division to supervise the work of inspectors. At the centre, the Rural Development Officer was appointed and a provincial Rural Development Board was organised consisting of officials and non-officials. This Board meets only once or twice a year and therefore fails to provide the driving force, which it was intended to do. The District Association has now a non-official chairman instead of the Collector.

The *modus operandi* was to organise the whole province on a co-operative basis. Each organizer was expected to organise a co-operative better-living society in the villages in his charge and to shift to another group and leave the society to carry on the work permanently under the guidance of the Co-operative Department. According to this plan better living societies would have been organised in each village within a short term of years and these would have continued the work of rural development. Efforts were to be made to persuade all adults in a village to join the Society,

1 *See*-Congress Government in U. P" published by the Congress Party.

which would thus consist of all classes of people. By the end of October 1939 some 4,000 such societies had been organised. But the Plan failed to mature fully on account of the outbreak of the present war and certain defects inherent in the scheme[1].

To strike the imagination of the villagers as well as to revive corporate activity and community life the selected villages were to build Assembly Halls or *panchayat ghar* by co-operative effort. The Government also contributed a fraction of the cost. Such buildings have now been erected in hundreds of villages and each provides a common meeting place, and often accommodates a Girls School, library or reading room, and even contains a seed store. It has also been utilized as a centre for medical aid.

Each centre in charge of an organiser was to have a Government seed store of the department of agriculture. The provincial Government budgetted in 1939-40 alone a grant of Rs. 25 lakhs for the construction of new seed stores. Improved bulls and agricultural implements were also supplied and fuel plantations were also started in a number of districts. Efforts were made to improve irrigation facilities by providing special grants for the purpose to the district associations. The activities of the Industries Department were co-ordinated for the revival of old and introduction of new rural industries. Each selected village was supplied with medicine chests while a number of new fixed and travelling dispensaries were started. The whole scheme was linked with a plan for the removal of illiterecy through the provision of more schools, reading rooms and libraries. Sufficient attention is paid to propaganda work and the Rural Development Department has its own magazine, *Hal*, in *Hindi* and *Urdu*..

But the Rural Development Department cannot claim much by way of its achievements. Even the Congress Party, which has been most enthusiastic about it during its regime in the province, (when the activities of the department were perhaps at their best) admits that the improvements effected by it in the villages were few and insignificant when compared with the enormous needs of the country-side.[1] It could, however, achieve some revival in the corporate life of villages selected for intensive work but that too

1. For 1944-45 the Government budgetted an expenditure of Rs. 17,46,400 for rural development.

1. "Congress Government in U. P." July 1937—October 1939, *op. cit.* p. 81.

was very litile and tends to be temporary. The basic idea in the scheme to embrace all villages in the province within a few years has simply proved to be a dream of a visionary. In fact, unless a village is not organised as an autonomous unit for local administration there is little chance of mass awakening and improvement. In other words the traditional organ of the corporate life of villages in India, the *panchayat* should be raised to the status of a genuine village authority having administrative and judicial powers in local matters and enjoying financial stability and independence. It is true that at the present stage there may be a danger of corruption and stagnation in their administration, to guard against which, we should proceed by mass education on widest scale and stimulation of co-operative action through the organisation of a multi-purpose society in each village. This initial period need not be long and realisation of the final objective of village autonomy should not be unduly delayed. Raising the standard of living of the rural population is an uphill task, which may necessitate a complete abandonment of the present structure of rural economy and for which the existing schemes of reconstruction are too shallow and weak. Their limitation is well expressed in the following words of the Reserve Bank: 'A whirlwind campaign of cleaning village streets, digging pits for manure, and using mosquito nets and quinine may, for the time, transform completely the outward aspect of our villages, but the effects will endure only if there is a continuous and consistent policy which rouses a spontaneous desire for betterment and the will to exert for it'.[1] Education alone can lend this will and spontaneity, co-operation the *modus operandi* and village autonomy the power to realize it.

Demonstration.—In order that improvements may readily be effected, conviction in favour of a change is a pre-requisite of adoption. Considering the widespread illiteracy in the country th Government has relied on occular demonstrations for this purpose' The demonstration farm and the demonstration plot are the two methods adopted to prove to and convince cultivators the advantages of an improved seed, implement or technique.

The Demonstration Farm and the Demonstration Plot.—The demonstration plot is now commonly recognised as the better method as it carries a demonstration right into the heart of a

1. Review of the Co-operative Movement, *op. cit.* p. 88.

village and therefore has a greater chance of influencing the practice of cultivators. A demonstration farm on the other hand is the only way of demonstrating the advantages of any large-scale agricultural operations for which cultivators' plots are too small. In other words a demonstration plot is effective only when an improvement is within the range of small-scale, scattered and fragmented farming. In such cases it proves to be the best, as demonstrations can be widespread so as to be in the presence of cultivators in many villages, and convincing, for the changes demonstrated are obviously within the means and conditions of cultivators. Hence, for the introduction of improved varieties of seeds, small implements, manures, minor changes in practice etc., a demonstration plot is more effective than a demonstration farm, which is visited by few and where the farm-buildings, the superior cattle, the implements and machines, careful lay-out, capitalisation and large-scale operations convince a cultivator about the impracticability of improvements in his own conditions. If, therefore, the objective is, as it should be, to convince cultivators of the advantages of radical changes in their system a technique will have to be perfected, which may combine a demonstration farm and organisation of village community. In other words the emphasis should be shifted from demonstration farms and plots to model villages, having large-scale operations and equitable distribution.

At present the demonstration plot, which is in vogue, is either a small field in a village hired by the Government and cultivated by the agricultural department to show the advantages of certain improvements; or it is a plot cultivated by the operator himself under the close supervision of the agricultural demonstrator. In both cases improvements have to be within the means of the cultivators and the system of their farming and obviously their scope is limited. Sir John Russell reported that there was a wide gulf between the experiment station and the cultivator and suggested that demonstrations should be made by means of holdings taken as a whole and simplified forms of experiments should be carried on cultivators' land, unless there was good reason to the contrary,[1] In fact, many improvements, which do not require much expenditure or a radical change in the system of farming would have been more widespread to-day than they are,

1. Report *op cit.* p. 74.

had the technique of carrying the results of research and science to the cultivator been improved.

Agricultural Education.—Educated farmers in the West carry improvements immediately, in India they are conspicuous by their absence and this presents perhaps the most serious of all the difficulties in the improvement of agriculture in the country. The farmers for example in Great Britain are competent agriculturists with a thorough knowledge of crops and live-stock, and are always eager to adopt any improvements that the experiment stations may succeed in making. Improvements have not to be carried to them, for they take them at once they are known. 'Indeed the experiment stations', in Great Britain, records Sir John Russell, 'think themselves fortunate if they can obtain yields as good as those of the best farmers, and their best hopes of success are to overcome some special difficulty or to develop alternative methods of achieving some desired end. The staffs of the experiment stations are compelled to keep in touch with practical men or they would find themselves outclassed in the struggle for agricultural improvement'.[1] The conditions in India are quite different. The cultivator is entirely uneducated and ignorant. Certain facilities have of course been provided for agricultural education but these are so limited that the students after their training, particularly at agricultural colleges, find themselves in such demand by the Government itself that they seldom settle on their independent farms.[2] There are certain difficulties as well in the way of agricultural graduates going back to land so that they prefer any service to independent farming. The Government will be well advised to investigate the reasons for such state of affairs and remedy the situation, because specially trained farmers would be a real asset. The present facilities for agricultural education are provided by the Imperial Agricultural Research Institute for post-graduate training, the few agricultural and mixed Colleges for full degree-courses, and by the Middle and High Schools providing agriculture as an optional subject. There are a few vocational agricultural schools as well particularly in

1. Report *op* cit. p. 65.

2. Sir John Russell has described the situation beautifully in the following passage in his report p. 66: At each centre I visited I enquired how many College students were farming: occasionally figures were given to me and I enquired for names and addresses, so that I might write for information, but my letters were mostly either returned or unanswered, and in all my journeys I met only two or three college trained farmers.

Bombay for teaching agriculture in vernacular. The remarks of the Royal Commission that 'no more agricultural schools of this type should be opened and that the existing schools in their present form should be closed', although primarily based on financial grounds, emphasise the necessity that agricultural education in Middle Schools should not be given in a manner as to debar students from going up to higher stages of education. Almost a similar view is expressed by the Central Advisory Board of Education in its recent report on Post-War Educational Development in India. After recording that agricultural education should be regarded as an essential branch of technical education the Board holds that senior Basic (Middle) as well as High Schools in rural areas should have an agricultural bias. The report further adds; 'In this country with its vast agricultural population, as Senior Basic Schools and High Schools with an agricultural bias become more widely spread, the more advanced stages of Agricultural Education should be closely linked up with the lower, and Agricultural Colleges of every type should be regarded as essential parts of the top educational storey and should come under the general control of the Education authorities'. The Board decided to set up a special committee of educational and agricultural experts to consider the subject fully. It may be added here that facilities for higher or university education in agriculture are disproportionately small even as compared to other professions[1], let aside the consideration of requirements on more vital grounds. The proportion of students of agriculture in Degree colleges to the total population is less than one to three *lakhs*, while of all university students it is 1 to 2,206. If on no other grounds, it is almost an economic necessity that a large number of Degree colleges teaching science subjects in particular should be expended as to provide facilities for teaching in agriculture as well. But the universities in effecting such expansion should take proper care that the standard of agricultural education and training is not reduced thereby and the colleges providing such courses have proper equipment and well qualified and trained staff. The recent establishment of such colleges in the United Provinces is decidedly a move in the right direction although there is a great scope of improvement in the actual working of such institutions.

1. In 1941-42 there were 1,76,291 students in India reading for professional degrees of which 7,866 had taken up Law, 6,871 Medicine, 6,490 Commerce, 2719 Engineering; 2,936 Education, and only 1,194 Agriculture.

CHAPTER XIV.

Recent Policy, Measures and Planning.

War-time Policy:—The backwardness and inefficiency of our agriculture became glaring as the exigencies of the present war situation necessitated fresh adjustments in it. Its production was already failing to keep pace with the growth of population in the country; but a faulty system of distribution, under which growers were obliged (due to the pressure of low prices and high rents and interest charges) to feed others by curtailing their own proper requirements to a minimum subsistence level, coupled with imports of rice from Burma had made the State apparently oblivious of the situation. But as war progressed causing a great amount of trade and traffic dislocation the problem of shortage of foodstuffs and surpluses of staples like cotton and oil seeds became increasingly acute. It demanded a re-orientation of agricultural policy. The measures adopted by the Government have already been examined in their respective heads in the previous chapters. It remains to be added that the war-time agricultural policy of the Government of India has been directed primarily to the solution of the food problem without interfering with the traditional structure of agricultural economy of the country. Naturally, the scope for success within this iron framework has been little and the limited achievements[1] of this policy point out definitely to the need of far-reaching adjustments. A bold agricultural policy, if adopted, could have achieved more substantial gains even without any sudden transformation of our agricultural economy; although for a final solution of the problems confronting rural masses in the country nothing less than an economic revolution is needed. The Government could not adopt a drastic policy for a complete modernisation of Indian agriculture so as to place it on sound footings during the last few years, as it is weak, its attention is primarily focussed at theatres of war, and there is dearth of necessary equipment, skilled labour and organization in the country; but no historian can forget to censure it for its failure to mobilize to the fullest extent the vast agricultural resources of the country for the successful prosecution of the present war.

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1. The Bengal Famine of 1943 is a striking example of its failure.

Grow More-Food Campaign[1].—As a result of the comprehensive recommendations made by the Food Production Conference, which met on 6th April 1942 the Government of India launched a "Grow More Food Campaign" in the Summer of 1942. In the beginning, additional areas under foodgrains were secured chiefly by diverting lands from short-staple cotton to foodgrains. The Government of India sanctioned grants out of the Cotton Fund to assist the cotton-growers to divert lands from short-staple cotton to food crops while cultivators of foodgrains were assured of protection against an undue fall in the level of prices. For 1943-44 targets of minimum increase under major foodgrains acreage were fixed for the various provinces on the basis of the requirements of the country as a whole, including those of the Defence Services and for essential exports, as estimated by the Food Department. These targets aimed at a total increase of 100 lakhs acres under *kharif* and of 13 1/3 lakhs acres under *rabi* crops over the average of the period 1936-39. Besides grants from the Cotton Fund, financial assistance has been given by the Government of India to the Provinces for schemes of increasing food supply.

The campaign seems to have already achieved some success. Dr. W. Burns has recorded in his Note on Technological Possibilities of Agricultural Development in India that there was in 1942-43, not only a switch-over from cotton to food-crops, but also an absolute total increase in the area cultivated. This increase over the acreage of the previous year was to the extent of 347,000 acres in the Central Provinces; 1,467,000 acres in Bengal; 582,940 acres in Assam and 820,000 acres in the United Provinces. But there was a slight decrease of 690,631 acres in Bombay due mainly to inadequate rain in certain parts. Besides, there was a diversion of the area under cultivation from cotton to food crops. There was an increase in acreage under rice, wheat, groundnut, sugarcane, castor, sesamum, linseed, rape and mustard in 1942-43, over that of 1941-42 to the extent of 3·39 million acres[2]. Cotton acreage during the same period declined by 5·34 million acres. It is therefore evident that the campaign did not succeed in bringing the total area released from cotton cultivation under food crops. For 1943-44 it was

1. See the statement issued by the Department of Education, Health and Lands, entitled 'Grow More Food Campaign,' what it has achieved in 1942-43 crop season and what it hopes to achieve during 1943- 44 crop season.

2. The figures are for all the British Provinces plus the Indian States, excluding Hyderabad, Kashmir and a few smaller States.

revealed by Sir Jogendra Singh in an address to the fifth All-India Food Conference on January 30, 1945 that the area under grain crops had increased by over 11 million acres as compared with the pre-war average of the three years ending 1939, giving an additional yield of 4 million tons of foodgrains. This was brought about by a decrease of 4 million acres under cotton and the balance by bringing under cultivation marginal and fallow lands. The Government of India has assisted in this by grants and loans for the sinking of over 2,500 tube-wells at an estimated cost of Rs. 4½ crores and nearly 17,000 masonry wells at a cost of nearly Rs. 2 crores. It has also provided finance for other purposes as well particularly a loan of Rs. 1½ crores for the procurement and purchase of good seed.

The results of the campaign cannot rightly be studied with reference to the out-turn of crops because variations in it from year to year are influenced apart from acreage by seasonal conditions. The latter even determines to considerable extent changes in the area under cultivation. Hence the entire increase in area under food crops cannot be attributed to the Grow More Food Campaign—a considerable part of it is perhaps due to the relative price movements of food and non-food crops. Such a conclusion becomes all the more irresistible when we find that the campaign is being carried on by propaganda, *i.e.* persuasion plus certain benefits rather than by legislative compulsion based on a crop plan.

Non-compulsory measures, as past experience with reference to jute in Bengal and sugarcane in the U. P. indicates are not very effective in bringing about crop adjustments. To illustrate, the Government of Bengal attempted from 1932-33 to voluntarily restrict the acreage under jute by propaganda. The campaign did not succeed and the Government was obliged to adopt a scheme of licensing jute areas under the Jute Regulation Act of 1940. This met with a fair measure of success. There should be no doubt that the Government of India for its 'Grow More Food Campaign' has adopted a very weak weapon for without an element of compulsion there is little chance of its success. Where results are to be achieved without losing any time it is no use to waste effort in arguments and persuation—the best course lies in compulsion combined with proper compensations and concessions. The campaign as carried out at present has little direct appeal and even the indirect measures that have been adopted such as waiving of interest on *taccavi* loans, free distribution of seed, reductions in the charges

for irrigation, well-boring, collection of green manure in forests, and oil-seeds, and loans etc. are not sufficiently effective. The recommendations made by the Food-Grains Policy Committee in this connection are therefore of far-reaching importance and need to be implemented at an early date. These are reviewed in the next section.

A suggestion about collection of data made by Dr. Burns in his Note (already referred to) also deserves a careful consideration. He deplores that, 'we have no figures to indicate what particular increase in acre-yields were obtained by the application of manures and additional water and how these increased out-turns compared in value with the expenditure incurred to produce them. It is desirable that some such data should be obtained and that the data should he accurate, *i.e.* vouched for by those who actually did or supervised the work. The same type of data is required for each season—*kharif* or *rabi*—as long as the Grow More Food Campaign lasts.'[1] Reliable sample surveys of typical regions will not only help in directing the campaign into right channels, but may prove exceedingly useful for making our post-war plans.

Foodgrains Policy Committee 1943:—In view of the grave situation in respect of the supply and distribution of foodgrains, a Foodgrains Policy Committee was appointed on 15th July 1943 to examine the past policy and present position in India in relation to the supply, distribution and price of foodgrains in the light of all relevant conditions including those imposed or liable to be imposed by the war, and to make recommendations both of policy and for administration, for securing, for the duration of the war, maximum supply, equitable distribution and proper control of prices in relation to foodgrains.'[2] Some of the recommendations of this Committee have already been examined in previous chapters with reference to the discussion on subjects covered by them. The following sections therefore summarise briefly its main propositions:—

The Report of the Committee emphasised that the *per capita* availability of food supplies in India, even in normal times, was low and imports although forming a very small percentage of the total production in the country were significant. Certain areas, particularly Bombay and the Malabar coast depended disproportionately upon such imports.

1. Note Page 38. 2. Report p. 1.

The remedial measures proposed in the Report fall under five main heads, *viz.*, (1) increase in available supplies, (2) improved procurement machinery; (3) extension of rationing; (4) extension of the principle of statutory price-control; and (5) a general overhaul of the machinery of Administration and a re-adjustment of the relations between the Provinces and the Centre. All these measures are intimately linked up with one another and the success of any one is limited by progress in the other. With regard to the first the Committee recommended the urgent necessity for importing 1½ million tons of foodgrains in the first year and 1 million tons per annum in succeeding years. This was estimated on the basis of the average annual net imports of 1 million tons during the previous five years; and as such it was an under-estimate because it did not take into consideration the increased requirements due to an increase in population, or to war effort. For increasing the supply of domestically grown foodstuffs the most important recommendations are those (1) which ask for assistance to industrialists for the importation of plant for the manufacture of Ammonium sulphate to the extent of at least 350,000 tons a year, and (2) urge that adequate supplies of iron and steel should be secured for the replacement and repair of worn-out or defective agricultural implements. Other recommendations in this connection were for increasing the production of compost from night-soil and town refuse, large scale distribution of improved seed, extension of such irrigation and drainage schemes as promise quick results, preventing depletion of serviceable milch and draught cattle, importation of tractors and other agricultural implements, empowering Provincial Governments to regulate crop production and to compel the cultivation of culturable waste lands, under-polishing of milled rice, appointment of additional staff in the Provincial Departments of Agriculture, and adoption of schemes of research especially those, which have a bearing upon the immediate short-range problems of food-production. Had these recommendations been carried out in full the effect on food production would have been very significant. It is really deplorable that the Government of India has tried to put in actual practice only some of these measures and its adoption of the recommendations contained in the report has been only half-hearted.

As regards rationing, the Report stresses that the minimum ration should not normally be allowed to fall below 1 lb. of cereals per adult per day and if this cannot be guaranteed out of home-

supplies, then imports *must* be arranged for. But so far this minimum standard has not been attained in all the rationed towns. The Committee recommended an immediate introduction of rationing in the larger cities of India beginning with those with populations of one lakh and over and to be progressively extended. It was in favour of extending rationing to all classes and sections of the population in such cities. The Government is still far behind even in implementing this recommendation. The Committee pointed out that general rationing for rural areas was not possible but at the same time it emphasised that in famine or semi-famine areas distribution should not be left to the normal channels of trade and Government action was absolutely imperative.

Finally, the Report suggested the creation of a Food Board, to secure continuous and co-ordination of effort in all directions. It also laid down that the centre should have 'the last word' as regards (*a*) price changes, (*b*) allocations of supplies, (*c*) the management of the Central Food Grains Reserve, (*d*) any conditions laid down for rescue or special assistance operations, and (*e*) details of administration. It is but proper that every effort should be made to secure uniform policy and equitable distribution of food supplies with a view to bring about maximum economic welfare in the country as a whole.

Growing (Fertilizer) Commission Report: One of the most outstanding recommendations of the Foodgrains Policy Committee was with regard to the establishment of a plant for the manufacture of Ammonium sulphate. The question was examined further by a Fertilizer Committee and it is now reported in the Press[1] that the Government has decided to establish the new industry under state-control in view of its national importance. It is surmised that the entire production will be distributed over two plants, one producing 350,000 tons of Ammonium sulphate for the north and the other producing 100,000 tons a year for the south. It is reported that most of the capital will be contributed by the Central Government for the northern plant, whereas for the south it will be shared with the Governments of Madras, Bombay, C. P., Mysore, Hyderabad and Cochin. Travancore already has its own plant with 51 per cent State capital. The decision of the Government that the industry will be state controlled should be welcome to all. It is estimated that the capital requirement of the northern plant would be about

1. *Leader*, January 13, *1945*.

Rs. 10 crores and as calculated by the Growing Commission the expenses of production will be Rs. 126 per ton of Ammonium sulphate.[1] The cost may still be too high for the average cultivators and hence the Government will be well advised to sell the produce at lower prices. The Provincial Governments may be asked to subsidize production for the purpose.

The Bombay Plan:[2] In schemes of post-war planning in India the Bombay Plan occupies a unique position particularly because one of its signatories *viz*, Sir Ardeshir Dalal has been appointed since August 1944 as member for Planning and Development of the Government of India after the publication of its first part. The plan is in no sense a complete scheme and as its authors have explained its object is to put forward in a concrete form the objectives to be kept in view in economic planning in India and their views regarding distribution and the part to be assigned to the State in a planned economy. The plan is reviewed in this section only as far as it affects agricultural progress.

The principal objective of the plan is to bring about a doubling of the present *per capita* income within a period of fifteen years from the time that the plan comes into operation. Allowing for an increase in population it will necessitate a trebling of the present aggregate national income. This is proposed to be achieved in the following ratio:—

Net Income in croress of rupees.

	1931-32.		Expected after 15 years.	Percentage increase.
			Rs.	
Industry	374	....	2.240	500
Agriculture	1166	....	2,670	130
Services	484	....	1,450	200

1. The Imperial Chemicals are supplying Ammonium sulphate at present in the country at Rs. 240 per ton.

2. It has been called 'A Plan of Economic Development for India' by its authors. It is published in two parts. The first part (published January 1944) was signed by Sir P. Thakurdas, Mr. J. R. D. Tata Mr. G. D. Birla, Sir Ardeshir Dalal, Sir Shri Ram, Mr. Kasturbhai Lalbhai, Mr. A. D. Shroff and Dr. John. Matthai. The 2nd part was published in December 1944 and did not include the name of Sir Ardeshir Dalal in the list of its signatories.

It is assumed that the country will not be able to absorb more than 130 per cent increase in agricultural production at the end of the execution of the plan, when the contribution of agriculture to the country's national dividend will be only 40 per cent. At the same time agriculture will continue to employ the greater part of the population.

To increase agricultural production the authors have pointed out the need of certain fundamental reforms—the foremost being consolidation of holdings and increase in their size. To bring it about co-operative farming is advocated with the help of some measure of compulsion. It has also been pointed out that liquidation of the burden of agricultural indebtedness principally through co-operative societies is necessary. Finally, we are told, soil erosion should be checked and measures should be taken for soil conservation and other permanent improvements to land.

Agricultural production, the authors emphasize, can be increased by (*i*) extending the area under cultivation, (*ii*) improving the yield per acre, or (*iii*) a combination of both. The second can be brought about by better methods of farming which would include irrigation, better rotation of crops, use of better varieties of seeds, manure, improved types of implements etc. They estimate the required increase at 200 per cent in the area irrigated by canals and by all the other means combined. Taking into consideration the fact that the total capital outlay on the existing canals amounts to Rs. 153 crores in 1938-39 and the annual working expenses were in the neighbourhood of Rs. 5 crores, the capital cost of additional canals has been worked out at Rs. 306 crores and Rs. 10 crores per annum as working expenses. But since construction of new canals may involve erection of expensive drains for impounding water the initial requirement has been placed at Rs. 400 crores. The cost of constructing tanks, wells etc, to irrigate another 48 million acres has been estimated at Rs. 50 crores with little maintenance charges.

For popularising improved methods of cultivation and dairy farming, reliance has been placed in the plan on model farms—the target being one model farm for 10 villages at an average. The cost of establishment of such a farm has been estimated at Rs. 50,000, Rs. 30,000 on account of capital and Rs. 20,000 on account of working expenses.

The total amount of capital required for increasing agricultural production to the target figures in the plan has been estimated as below:—

Expenditure in crores of rupees.

	Non-recurring.	Recurring.
Soil conservation etc.	200	10
Working capital	....	250
Irrigation Canals	400	10
Irrigation Wells	50	....
Model farms	195	130
Total	845	400

This capital requirement of some 1,240 crores of rupees for agricultural development in India is out of Rs. 10,000 crores, the total capital needed according to authors for economic progress in all branches. The capital requirements in other spheres have been estimated as below:—

In crores rupees.

Industry.	Communi-cations.	Education.	Health.	Housing.	Misc.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
4,480	940	490	450	2,200	200

The authors suggest that the plan should be subdivided into 3 plans each covering a period of five years and thus the capital needed for agricultural development would be Rs. 200 crores, Rs. 400 crores and Rs. 640 crores respectively in each successive period.

The authors explain their views regarding distribution in Part II of the plan. They take into consideration the estimate about the *per capita* average income which in 1931-32 varied from Rs. 51 to Rs. 166 in rural and urban areas respectively and further that in rural areas, the income of the majority of the people must have been less than the average of 51 rupees as farmers holding less than 2 acres of land form a large proportion of the cultivating class, the agricultural labourer gets little and an average cultivator is generally without any work for 3 to 6 months in the year. Since then the increase in population must have considerably

increased the pressure on this class. To secure an equitable distribution of income it is proposed to reduce the existing inequalities of wealth and property and to decentralize the ownership of the means of production by imposition of death duties, reform of the system of land tenures, development of small scale and cottage industries, widespread distribution of shares in Joint-Stock companies, regional distribution of industries, development of co-operative enterprise, and control by the State accompanied by State ownership or management of public utilities, basic industries, etc.

To secure a minimum standard of living they propose two classes of measures: (*i*) those that would raise the general level of income and (*ii*) those that would reduce the cost of living. With reference to the first the plan suggests provision of full employment, increase in efficiency, improvement in urban and rural wages, security of agricultural prices and development of multipurpose co-operative societies, and reform of the land system. Reliance is largely placed for full employment on the fullest possible development of small scale and cottage industries for the industrial workers and introduction of mixed farming, extension of double cropping and provision of subsidiary industries in the case of cultivators. It is expected that the plan will modify the present occupational distribution as follows:—

Occupational Distribution in 1931 and 1962.

	1931		1962	
	Millions	Per cent	Millions	Per cent
Agriculture	106·3	72	129·7	58
Industry	22·1	15	57·9	26
Services[1]	19·2	13	34·7	16
Total working population.	147·6	100	222·3	100
Total population	338·1	....	494·0	....

The authors of the plan point out that the general level of wages must increase and that the wage rates of industrial and agricultural labour must be gradually adjusted. The process must

1. This category includes trade, transport, Government administration, professions, domestic service and persons living on their own income or engaged in unproductive occupations.

begin with the wages of agricultural labourers numbering 30 millions in 1931 and which are as low as 2 to 5 annas a day for men, 1½ to 4 annas for women and 1 to 2 annas for children. Employment even at these low rates is not continuous. It will therefore be necessary to fix minimum rates of wages for agricuitural labour on a regional or local basis and their enforcement would be facilitated with the development of co-operative farming. For industrial workers the Bombay planners say that the establishment of a basic minimum wage for all occupations cannot be considered at this stage, although a beginning may be made in certain well established industries like cotton textile, sugar, cement, engineering, jute, mining, etc. But in the initial stages, the minimum wages should be related to the normal wage level prevailing in each industry. They have further suggested that for the principal agricultural crops, the Government should adopt a policy of fixing fair prices in reference to the cost of living and cost of production in each area. This may necessitate the regulation of imports by means of tariffs or by fixing quotas. An extensive organisation of multipurpose co-operative societies has also been suggested to minimise the difference between the prices paid by the consumers or exporters and those realized by the cultivators. But a great stress is placed on the reform of the land system through the introduction of the *ryotwari* system in the place of the existing *zamindari* tenures. For bringing about this change they have quoted with approval the following passage from the "Indian Rural Problem by Sir Manilal B. Nanavati and J. J. Anjaria"; 'As a first step, "the State should take over the landlords' functions and pay the landlord a fair rent for the land, deducting therefrom the expenses incidental to the discharge of these duties. Later on, when the State is in a better position, this may be commuted into a lump sum payment and the landlord's claim thus finally extinguished. For the immediate present, the link between the landlord and the tenant should be broken.' Reform of the system of Land Revenue-would also be necessary mainly in the direction of making the basis of assessment uniform, to link revenue with the trend of prices, and to lower its pitch. The authors of the plan hold that agricultural income above a certain level must be subject to income-tax.

As a result of the measures advocated in the plan and by assumin that the cultivators would earn through subsidiary occu-

pations, 5 per cent of the income from industry and services, the authors estimate the following improvement in incomes:—

Average Income per occupied person.

	1931 Rs.	1962 Rs.	Increase per cent
Agriculture	114	220	93
Industry	161	368	129
Services	264	397	50

For reducing the cost of living (*i*) provision of free social services *e.g.* Primary and Middle School education, adult education and medical treatment, and (*ii*) provision of essential utility services *e.g.* electricity and transport at low costs, are advocated in the plan.

Finally, while giving an indication of the lines on which production is to be organized the authors of the plan lay down that there should be—(1) sufficient scope for the play of individual initiative and enterprise, (2) the institution of adequate sanctions against the abuse of individual freedom and (3) a positive role of the State in the direction of economic policy and the development of economic resources. State control however, appears to them to be more important than State ownership or management from the point of view of maximum social welfare. This control is to operate mainly in production, distribution, consumption, investment, foreign trade and exchange, and wages and working conditions. They have recommended Professor Pigou's dictum of gradualness, and the same pattern of economic organisation which he foreshadows in his book, "Socialism *versus* Capitalism" *viz.*, the general structure of Capitalism to be modified gradually for diminishing the glaring inequalities of fortune and opportunity by graduated death duties and income tax, a large measure of public supervision and control of industry, and Nationalisation of important industries.

A Critical Review of Certain Aspects of the Bombay Plan

Particular aspects of this plan have already been subjected to :

review, wherever necessary under the various sections. But it is necessary here to point out those fundamental defects of the plan, which vitiate its utility to a great extent and since the post-war planning policy of the Government of India is being influenced largely by it, these have crept therein as well. Of these, the most important is the omission to emphasise the role of price parity in a nation's economy and the resultant confusion in output and income. Price-parity has an important bearing on all aspects of economic life and as such is an important key to both production and distribution. Therefore the maintenance of a proper price-parity and not merely safeguarding fair prices for individual commodities in relation to their cost of production should be one of the main objectives of a planned economy to ensure an equitable distribution of the net wealth produced rather than the inflow of money income each year in a country. The Bombay Plan confuses grossly output and income and is essentially in terms of rupees, annas and pies. If the two are clearly distinguished and properly linked, social welfare may be maximised a great deal more than would be possible under the plan. The increase in output may be related to the needs of the country with reference to a general standard of living which would leave a reasonable margin over the minimum requirements of human life as the authors of the Bombay Plan have proposed. To assure that the increased output finds a market within the country individual incomes and not the average income only, should be increased in such a way that each has the purchasing power to get his minimum share. The problem is certainly a complicated one and it may not be practicable to assure such distribution to *each* individual; yet price-parity provides a mechanism, although a very delicate one, to safeguard the interests of people in *each class* in general. To put it concreately let aside the controversy of increase in output in industry, agriculture and services to be aimed at (and even admitting the targets of the Bombay Plan as satisfactory *i.e.* 500% 130% and 200% increase respectively under these heads), money incomes of the different classes should finally be in proportion to the workers employed by them. This will necessitate an extension of the present system of price control, not merely to check an upward trend, but with the deliberate purpose of reducing the glaring inequalities in the enjoyment of wealth and to guarantee a reasonable standard of living to all.

Without such a comprehensive price policy it is hardly conceivable that agriculturists will get a fair deal in any scheme of planned economy within the general structure of capitalism. As far as the Bombay Plan goes the increase in average income foreshadowed in it will accentuate the inequalities in the standards of living of the different classes of people and the agriculturists will become *relatively* poorer. The average income per occupied person in agriculture was less by Rs. 47 and Rs. 150 per annum from that in industry and services respectively in 1931; but after the execution of the plan it would fall short by Rs. 148 and Rs. 157 as compared with them. He would then earn about 60 per cent of the income of an average worker in industry while at present he is already getting more than 70 per cent of that. Moreover, the standard of income projected in the plan on the basis of which the foregoing comparisons have been based are not likely to be reached in case of the agriculturists and may even be surpassed in other categories. It is so, because firstly a relatively high proportion of workers has been assumed to be absorbed in industry under the plan, and secondly the figures of income of the agriculturists have been inflated by adding 5 per cent of the income from industry and services to it. In 1931, out of some 168 8 million workers in the country 17·5 millions were engaged in industry and 110·8 millions in agriculture. The 'Bombay Planners' have assumed that the number of workers will increase in 1962 by less than 75 millions over the figures of 1931. This is perhaps an over-estimate. Of these they assume 35 million additional workers will be absorbed in industry. This is again a very gross over-estimate. The factory industries in the country employ at present about 2 million workers only and hence even after making an allownce for the development of small scale industries we can assume at best a figure of 15 million workers for additional absorption in industries. Correcting the figures in lieu of these considerations we may find at the end of the plan an average net income of Rs. 187, only per worker in agriculture as against that of Rs. 640 in industry[1] This will certainly make cultivators *relatively* poorer and may even stagnate industrial development.

Before proceeding further certain information collected and published by the Government is reviewed in the following sections

(1) My article in *Commerce*, 3 June, 1944.

as it will be helpful in clarifying the issues involved in planning agricultural development of the country.

Technological possibilities of Agricultural Development:—A Note[1] was prepared by Dr. W. Burns, C.I.E., D.Sc., Officer on Special Duty, Department of Education, Health and Lands on the 'Technological Possibilities of Agricultural Development" (*i*) under condition more or less as they exist today and (*ii*) under certain stated conditions, *e.g.* decrease in the inefficient cattle population, adoption of scientific methods of cultivation, improved tenancy organisation etc. in September 1943 to provide raw materials for discussions by the Reconstruction Committee. He has deplored in the first instance the fact that agricultural statistics in India are extremely unsatisfactory. Dr. Burns estimates the possibilities of crops in the future in the light of the yields per acre if all known methods of improvement *i.e.* improved varieties, manure and protection from pests and diseases are applied. His conclusions are:—

Average yield per acre[2].

Crop.	Present yield.	Possibility of Increase in yield.	
		Percentage.	Amount.
Rice	738 lbs.	30 to 50	1000 lbs.
Wheat	640 lbs.	...	1200 lbs. irrigated.
Jowar	484 lbs.	20	600 lbs. barren.
Bajra	320 lbs.	25	400 lbs.
Maize	800 lbs.	25	1000 lbs.
Gram	500 lbs.	20	600 lbs.
Groundnuts ...	900 lbs.	11	1000 lbs.
Castor	259 lbs.	10	....
Sugarcane	15 tons.	100 to 350	30 to 55 tons.
Cotton	90 lbs.	?	?
Jute	16 mds.	....	20 mds.
Fruit	?	....	Enormous.
Potatoes	Varies.	100	?

(1) It contains about 127 pages, 104 statements and 97 graphs and shows the progress of farming in India as a whole and in its various provinces during the last 60 years.

(2) Compiled from the Note.

Dr. Burns has emphasized that in agricultural development two objectives must be clearly held in view : (1) the abolition of poverty of the cultivator, and (2) the abolition of the poverty of the soil. He has advocated a curtailment of the several kinds of wastes *viz.* waste of fertilizing material, waste of water, waste of time, waste of labour, waste of soil, waste of money, waste of live-stock. For manure he has calculated a need of 5,911 million pounds of nitrogen, which would be contained in 13·2 million tons sulphate of Ammonia. He has equally emphasized the necessity of extending irrigation facilities and of crop-protection.

With regard to organisation he refers to the need for collective action in many matters. He states: 'If at the moment we are not prepared to accept the implication that modern [illegible] methods demand the increase in size of productive units, we must at least admit that technological improvements are impossible without at least collective action by aggregations of units. This point is so clear that it must be made an essential part of any improvement drive. While proceeding with all necessary caution, we must not be afraid of involving a certain degree of compulsion to ensure such collective action. Persuasion by itself is not enough.'[1]

Again, after showing how in Great Britain under the stress of war the use of tractors has increased from 50,000 in 1939 to 150,000 in 1943, (the holdings are of moderate size of 100 acres or so only) he advocates the use of tractors for eradication of deep rooted weeds, clearing *jungle* land, making roads, *bunds* and channels in anti-erosion work, and on large estates where big areas have to be dealt with quickly and efficiently. Mechanization other than that involving tractors needs also be extended wherever it may prove profitable and efficient. To the sceptic he has to say that mechanization may mean fewer men per operation but not per acre. It will bring more money and take less time. But the resources of science and machinery can be utilized fully only when we abandon the peasant structure of agriculture and replace it by large scale exploitation of the land. Everything points to some type of collective organization.'

Referring to the posibilities of live-stock production it has been pointed out that scientific knowledge can be employed for

1. *Ibid* page 120.

increasing milk-yield as follows :—

Possibility of percentage increase of milk-yield.

of

	Cattle.	Buffaloes.	Goats.
By feeding ..	30	15	....
„ Breeding	15	15	....
„ Management	15	15	....
„ Disease control .	15	15	....
Total	75	60	50

Working efficiency of cattle can be improved by some 60 per cent, which will release millions of unwanted bullocks provided some system of co-operative farming is introduced. This will materially reduce the pressure on fodder. The present supplies of concentrates and roughages are sufficient for only 29·14 per cent and 78·53 per cent respectively of the cattle population. An increase in working efficiency will therefore be a great advantage. Likewise, wool production might be increased at least by 100 per cent giving an annual yield of 72 million lbs. white wool. Production of eggs can be increased from indigenous hens by 160 per cent and on a very conservative estimate by 80 per cent and thus ultimately rising to 12·98 eggs per year per head of human population.

I. C. A. R. Plan—In 1944, a Memorandum on the Development of Agriculture and Animal Husbandry in India was published by the Advisory Board of the Imperial Council of Agricultural Research, which throws further light on the problem of reorganisation. It is not a complete plan but a skeleton designed to serve as a framework for more detailed planning for the obvious reason as given in the Memorandum that agriculture cannot be considered as an independent entity and its development is part of the larger problem of rural development which must be tackled as a whole. Nevertheless, plans have been proposed in the Memorandum and even rough estimates of their cost have been made.

To state the nature of the problem, it is stated that at least 30 per cent of the population of India, or over 100 million people, are habitually under-fed in normal times, while the quality of the food

consumed is often unsatisfactory and unbalanced. The average annual production has been taken as 60·0 million tons cereals, 7·5 million tons pulses, 1·9 million tons fats and oils, 6·0 million tons fruits, 9·0 million tons vegetables, 23·0 million tons milk, 1·5 million tons meat, fish and eggs. To achieve national sufficiency in human foodstuffs, the Memorandum points out that production must be increased at least by 10 per cent of cereals, 20 per cent of pulses, 250 per cent of fats and oils, 50 per cent of fruits, 100 per cent of vegetables, 300 per cent of milk, and 300 per cent of fish and eggs. In addi- tion, it is necessary to increase the present production of oil-cakes and other concentrates by 400 per cent and fodder by 55 per cent. A proper balance should also be achieved between food and cash crops so that the purchasing power of the cultivators may be increased.

To attain these targets greatest emphasis has been placed on irrigation. It is suggested that surveys of resources and of the areas to be developed should be the first step towards maximum water utilization. In some tracts, field contour *bunds* may be of even more importance than irrigation, while in areas of heavy rainfall the problem is not one of water conservation but of water-logging. Improvement of drainage has therefore to be considered on a large scale. For utilization of land to its maximum advantage a survey is essential to determine causes responsible for keeping some 170 million acres, classified as culturable waste, out of cultivation. Likewise, control of erosion is necessary to prevent land going out of cultivation scientific experiments with a view to supply to the cultivator a schedule of cultivation suitable to his particular land and needs are regarded as indispensable. Finally, it is emphaized that the 'last major aspect of maximum land utilisation essentially concerns the cultivator himself and consists in attainment of higher crop yields by improved methods of husbandry, such as manuring, the use of better seed, the improvement of cultural practices and the control of pests and diseases'.

It has been explained in the Memorandum that, "Connected in some respects with the possibilities of power-farming is the need for determining the relative scope which different systems of farming offer in India in regard to maximum production and maximum well-being. Many believe that consolidated holdings are essential to increased production. Others have suceessfully adopted a system of consolidated cropping, using the village as a unit. Co-operative

farming and collective farming also have their advocates."[1] But no definite recommendation has been made and the issue has been shelved by pointing out the necessity of investigation in this connection without delay.

For increased production from Indian flocks and herds the Memorandum emphasises the need of improving the quantity and quality of their food supply, controlled breeding and the establishment in the beginning of some 50 stud farms. Further, apart from research, there is the most pressing need for extension of the organisation for controlling and suppressing prevalent contagious diseases of animals. Improved marketing, introduction of modern dairying equipment in the villages and the erection of a suitable plant for the manufacture of milk products are also necessary. These however call for a heavy capital expenditure. Similarly, there is need of tapping the fish resources of the country.

Technical progress, however, according to the Advisory Board is delayed and impeded on account of various economic difficulties and as such a solution of these latter is urgently needed. In other words, (*a*) cultivators should be guaranteed an assured market at a fair price, (*b*) possibilities of crop insurance should be explored, (*c*) agricultural debts should be liquidated at an early date, (*d*) arrangements should be made for provision of adequate credit facilities to provide working capital through co-operative societies or *taccavi* for loans in kind, (*e*) land-tenure system in so far as it hinders production should be modified, (*f*) subsidiary agricultural industries should be developed where feasible, and (*g*) finally the social aspects of village life must be improved by fostering and liberally financing schemes of rural reconstruction on a large scale all over the country.

Dealing with the question of marketing and fair prices, the I.C.A.R. plan contemplates fixing of fair prices for a given standard of quality for the more important food grains, establishment of regulated markets in some 2000 odd existing *mandis* with an inspector for each market and a separate news service marketing staff, provision of adequate storage accommodation for 20 million tons of grain, orderly marketing through co-operative organisations, licensing of traders at all stages, and maintenance of buffer

1. Report page 4.

stocks by the Government to stabilise prices. Such organisations should start with a district or *tehsil* and extend gradually to cover an entire province within a limited period. Differential prices for internal consumption and for export may have to be introduced. For the marketing of vegetables etc., Government collecting and marketing depots should be established experimentally as a preliminary to the establishment of co-operative marketing societies. This has to be supplemented by the development of cold storage, refrigerated transport, dehydration, etc.

With regard to fruits, it is recommended that existing fruit orchards should be renovated or new ones planted instead. There should be a Central Fruit Adviser, a Fruit Technological Institute with a number of regional stations, and in the Provinces a Fruit Development Board.

On the whole, while much of the detailed planning must fall on the shoulders of the provinces and the States, the centre must take the lead in many matters if progress is to be rapid. It must accept the main responsibility for fundamental research and should no longer remain entirely aloof from the extension of the results of the research into farm practice. The provinces may also rightly look to the Central Government for financial aid for encouraging and promoting research, extension or other action. Hence the creation of a Federal Department of Agriculture is recommended and the conversion of the Imperial Council of Agricultural Research into a Federal Agricultural Council, dealing with both research and development. The Board has further recommended a considerable strengthening of the staff of the Provincial Agricultural Departments so that an adequate organisation may be built upon the basis of treating a village as a unit. Each village should have a village guide to act as a link between the technical experts and the cultivators. He should receive an honorarium of Rs. 200 per annum. In addition, the staff of the department should be considerably increased.

The plan outlined above envisages the ultimate possibilities of increased agricultural production as 100 per cent over its pre-war level, say within a period of 15 years. The non-recurring costs of the plan have been guessed with reference to British India only at pre-war values at Rs. 1000 crores out of which about Rs. 300 crores are for development of irrigation facilities, Rs. 250 crores for

reclamation and anti-erosion measures, and Rs. 130 crores for drainage, anti-waterlogging and *bunding*. On the recurring side the estimates total Rs. 25 crores of which the Centre will have to bear Rs. 3 crores only. It comes to less than one rupee per acre on the basis of the present area under cultivation.

Post-war Development Policy: How far the above plan is likely to be adopted is not yet certain because as yet the Government has not committed itself to any particular measures. A clue to its post-war development policy can be had from the views expressed in the second report of the Reconstruction Committee of Council on Reconstruction Planning published recently. It does not contain any final conclusions nor any definite plans but is a summary of the views of the different departments of the Government of India. The general objectives of planning are stated to be raising the standard of living of the people as a whole, ensuring employment for all, more equitable distribution of wealth and improved education, health and housing. Short-term measures of reconstruction have been distinguished from long-term projects of development. The former will include schemes of demobilization, disposal of surplus military stores and equipment, conversion of industry from war to peace, and adjustment of controls to suit peace conditions. The latter includes developments of electric power, industry, transport and agriculture.

It has been emphasised 'that rural development must be dealt with as a whole and that the social and material advancement of the people must proceed simultaneously on all fronts'. It is handicapped at present by the absence of any real leadership and self-help in the villages themselves. The ex-soldier and the village schoolmaster may well fill this gap. An organisation is contemplated for the cultivators, 'which might take the form of a co-operative society or of a Trust which could be made attractive by Government assistance in the form of provision of seed, manure, irrigational facilities *e.g.*, improvement of wells, elimination of middlemen and provision of school and medical facilities. A number of such schemes should be started on an experimental basis in each province in order to discover the basis of organisation and to demonstrate its advantages. All new colonies and land brought under cultivation should be cultivated on this system'[1]. In the

1. Report p. 6.

beginning centrally placed villages will be turned into cultural centres for a group of say four or five villages. Such villages will have doctors, nurses, school teachers etc. In this connection appointment of Special Development Officers for each district has also been recommended. The Report looks from a very practical point of view when it admits that it is very doubtful if the postwar development of non-agricultural employment can absorb the whole of the probable increase in population. Hence the need of agricultural development cannot be over-emphasised. It has therefore been suggested that a Land Development organisation should be set up in each province, and the Executive should be armed with the necessary legal powers in the form of Soil Conservation or Land Development Acts.

Agricultural Policy:—Self-Sufficiency in respect of food and raw materials together with the production of raw materials for an export market is stated to be the broad aim of a national policy in the Second Report on Reconstruction Planning. After laying down the targets, which should not increase beyond the technological possibilities, it goes on to add, it will be necessary to define certain broad lines of policy to be adopted. Thus it will be essential to stabilize prices at an economic level to ensure adequate production. Crop-planning in some form or another will have to be adopted. Land tenures must be reformed so as to guarantee stability of rights and freedom from restriction to the actual tiller of the soil together with the benefit of his labour and investment in respect of land improvement. The policy is accepted that adequate arrangements will be made for rural finance although the actual role of money-lenders, co-operative societies, State and Commercial Banks has still to be considered.

The Report further points out that some form of compulsion under certain conditions is implicit in planning. In agricultural matters it might be applied for extending the area under improved varieties of seeds, in the control of grazing, erosion and conservation of land resources, breeding, vaccination of animals, to accelerate consolidation of holdings and prevent further fragmentation, and in marketing the produce. The projects relating to reconstruction given in the report are more or less based on the I. C. A. R. plan given in the last section and hence are not repeated here.

Need for a re-orientation of policy in certain respects: Without going into details of the Government policy and plans concerning development of agriculture and villages in the postwar period a close examination of the fundamentals discloses that the Government like the authors of the Bombay Plan has adopted a rather narrow and one-sided outlook, while as Sir Manilal B. Nanavati, President of the Indian Society of Agricultural Economics has pleaded, "economic planning in India, particularly agricultural planning, should be based on a sociological basis covering the whole man and every aspect of his life neither economic alone nor technical alone."[1] One can easily find out that the Government is interested in planning primarily for production and regards it more as a patchwork for demobilization schemes than anything else. Its outlook is primarily an administrative one to solve its own difficulties of food shortages and unemployment of the ex-service men. But man is not merely a unit in production, he is at the same time consumer as well. Hence any planning should be as much for distribution as for production. It should aim at self-sufficiency in terms of national requirements and at the same time guarantee a reasonable standard of living to each; otherwise without this latter safeguard, the former will soon establish an unbalanced economy. In other words the plan should be so broad-based as to shift the emphasis from self-sufficiency to social security from mere production to satisfaction. Controlled economy for production without a parallel policy for distribution may ultimately prove harmful even in the economic interests of a community. And where the objective is, as it ought to be with all systems of planning, the maximising of social welfare of which economic welfare is only an important part, such a narrow policy is decidedly bound to fail in achieving its goal.

Further, even while planning for production emphasis has been placed primarily on technical factors whereas in fact the economic and social factors are of equal importance. The attack will have to be carried on all fronts simultaneously and technicians can progress little even in their own limited fields unless aided by economists and backed by necessary social and other reforms in respect of rights in land and provision of agricultural credit. It appears that the Government is becoming increasingly conscious of the

1. Presidential address at the 5th Conference of the Society held recently.

problem and the setting up of a Board of Agricultural Economics is already under its consideration.[1] It is proposed that this Board would study problems of agricultural economics, like periods of unemployment and under-employment in agriculture, conditions of agricultural labourers, effects of land tenures on agricultural production, etc. A Land Utilisation Committee and a committee for making recommendations regarding agricultural debts have also been appointed. The Government also proposes to carry experiments in different places in collective and co-operative farming and farming by the State and capitalistic enterprise to find out the best method of production consistent with the social need for an equitable distribution of what is produced. The Government is apparently anxious for nationalising agriculture but if it is really so the functions of the proposed Board should be sufficiently widened from mere investigation to improvement on scientific lines.

A Resume: Without any attempt here to go into details of the general conclusions arrived at under different sections of this study, the broad outlines of a scientific policy of agricultural planning for the country are summarized in a nut-shell. No policy of reorganisation of agriculture in India can be successful unless it forms part of a policy for an all-round progress of industries commerce and trade as well so that the increasing pressure of population on land may be checked and even reduced in the long run. Finally, development of transport facilities is also an essential prerequisite.

In the field of production there is considerable scope and immediate need of increasing and diversifying the output by extending the area under cultivation and making agriculture more intensive through wholesale adoption of mixed farming. What is needed for the purpose is a scientific rationalisation of the industry on an extensive scale, which process pre-supposes a deliberate abandonment of the present structure of small scale farming and amalgamation of the existing tiny fields into large farms comprising whole village areas or even more. It further implies: (1) Extension of irrigation facilities to the fullest extent practicable in order that production may not continue to be a gamble in rain and the yields per acre may be raised considerably from the present

1. Press Report of the Proceedings of meeting of the Consultative Committee of Economists, January 1945.

incredibly low averages. (2) Mechanisation of farming with a view to add to the efficiency of both land and labour and to stabilize, improve quality, and maximise agricultural output. Sir Jogendra Singh, Member for Education, Health and Land has beautifully recognized its importance in a recent address[1] by quoting the London *'Economist'* that in this Machine Age, wealth is manpower plus horsepower. Tractors, harvestors, dairy machinery, pasteurizing plant, autocars and trucks, power pumps, etc. besides small machinery need replace the present equipment in a village; while cold-storages and processing plants will be required for each important centre of a group of villages. (3) Scientific cultivation through adoption of improved practices and methods, growing of improved varieties, judicious rotation of crops, adequate manuring etc. (4) Production on each village farm aiming at well determined targets fitting in a long range crop plan in each case prepared well in advance by experts. These village plans should be so framed as to dovetail into wider schemes of crop-planning ultimately embracing the country as a whole and thus form part of a national plan. (5) Electrification and supply of cheap power facilities to run machines needed for agricultural operations, processing plants and small scale industries in the villages.

To level up agricultural incomes price is as important as output. A low price may render agricultural improvements uneconomic while increased production may be accompanied by such a fall in prices as to depress incomes causing even distress and acute poverty. As a safeguard against such possibilities and to guarantee that the cultivators get a fair deal there should be no free markets for major agricultural and industrial products. A rigid system of controlled prices should be adopted for the distribution of all the necessities of life and even a few comforts. Price control should be based on the following considerations:—

(1) Barter terms of exchange between manufactured and farm products should be determined in such a way that persons engaged in each industry get an equitable share of the produce of the other so that the two may stand on the same footing in respect of standard of living and social amenities. This should primarily determine the producers' prices of goods in both the categories.

1. Address at the 5th All-India Food Conference in New Delhi *op. cit.*

(2) Consumers' Prices should be fixed on a differential basis allowing for different rates to provide some compensation for differences in incomes and purchasing power.

(3) Such price control can succeed best under a system of orderly marketing based on State Monopolies with little scope of private trade in the controlled goods. Rationing may also have to be adopted in certain cases at least.

(4) But controlled prices cannot be maintained long unless customers have adequate purchasing power with them. Such economy envisages full employment and minimum wages both in agriculture and industry *i.e.* some form of social security besides schemes of development.

For such rationalisation as has been outlined above certain inherent defects have to be removed while certain other facilities have to be provided. For a conversion of fields in a village into a modern farm all permanent transferable rights of individuals have to be vested in the managing authorities of these farms. It implies primarily the elimination of non-cultivating occupants or owners of land. Their rights should be acquired immediately at a fair price, which can be paid at once through a capital levy limited in each village to the amount required for payment of the price of its land. Another obstacle is the indebtedness of the farmers. A moratorium may be declared for a short period say, a year or two, at the expiry of which all present debts should be reduced to the repaying capacity of an individual and settled immediately. Finally, an organisation will be needed in each village to carry on farming on new lines including provision of adequate credit, to serve as an important link in the scheme of orderly marketing, to operate the various controls envisaged and to guarantee fair distribution and some form of social security within the village.

At first it may be co-operative, beginning with a simple multi-purpose society organised on the principle of compulsory membership. It will gradually extend its operations and add to its functions assisted at each stage by necessary power to compel. In the field of production it may start with consolidation of cropping, purchase of farm equipment on co-operative lines and finally introduce co-operative farming. The same society will rehabilitate

cottage industries on co-operative lines. Similarly, beginning with co-operative marketing of individual crops and commodities this organisation will finally emerge as holding a complete monopoly of all trade with or in the village. For credit it might function at first as an ordinary primary society and gradually as it succeeds and attracts more of local deposits it would emerge as a semi-monopolistic organisation dealing in rural credit. Its many sided economic activities and in particular the combination of credit and marketing might facilitate concentration of all local capital in its ambit, which if necessary, be augmented at a later stage by applying some measure of compulsion to unearth hoardings and idle money. Payment of minimum wages can also be assured through such co-operative units. Simultaneously the village *panchayats* need to be revitalized having such functions as collection of revenues and provision of social services through appropriate development activities including primary education, housing, medical aid, sanitation, village roads light etc. In fact the best results would be achieved by an integration of the society and *punchayat* into one single unit having economic as well as administrative functions—at once the symbol of rural democracy and guardian of rural welfare in the comprehensive sense of the term.

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