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REPORT

ON

THE PRESENT STATE OF ROAD AND RAILWAY COMPETITION AND THE POSSIBILITIES OF THEIR FUTURE CO-ORDINATION AND DEVELOPMENT, AND COGNATE MATTERS, IN GOVERNORS' PROVINCES

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PREFACE.

We have endeavoured in this summary to collect and bring into focus the information and opinions we have gathered during our investigations. Our aim has been to review the position as a preliminary to a general discussion in a conference, and to summarise ascertainable facts and opinions. We are not a committee charged with making recommendations and we have endeavoured throughout to avoid imparting any bias of our own opinions to what we have recorded.

But this is not merely a summary of our provincial reports. During our investigation, we have found certain outstanding features, such as the want of balance in road development; short-comings of railways as compared with motor transport in meeting the needs of the public; complaints of excessive taxation from the motor transport industry; the railway point of view that the burden of railways is greater; and various suggestions for co-ordination; to which we feel we must refer and regarding which we venture certain conclusions which appear to emerge. Owing to the hurried nature of our tour and to the wide field covered by our enquiry, we have not been able, in our provincial reports, to deal in every case with all the questions discussed, and while in this summary we have supported most of our statements by references to provincial reports, it must not be assumed that where such references are not given we have no support for our statements.

We feel that this general picture may be useful and we venture to hope that the whole will contribute something to a satisfactory solution of the important matters we have been asked to examine.

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Report on the present state of Road and Railway Competition and the possibilities of their future co-ordination and development, and cognate matters, in Governors' Provinces.

GENERAL REPORT.

CHAPTER I.—SKELETON REVIEW OF THE EXISTING COMMUNICATIONS. BEGINNING OF ROAD COMPETITION WITH RAILWAYS. THE MOTOR TRANSPORT CASE.

1. *Need for a general review.*—We are concerned with the future rather than the past, but we believe that while in the reports dealing with each Province we have attempted to review local conditions, a brief general review of existing communications and of their evolution will be of value for several reasons. In the first place a bird's eye view of the present position is necessary to any discussion of its development; secondly, in so far as certain present features may be unsatisfactory, the underlying reasons should be examined in their relation to the future; and thirdly, since in an agricultural country a market on a railway must be the focus of all local road systems, it is important to consider how far the present railway mesh satisfies present day requirements, and how far complementary road development may not result in the provision of an improved main feeder road to-day that will, with the construction of a parallel railway, become the competitive road of to-morrow.

2. *Outline of past development.*—For that has been the process of evolution. We will show later that nearly one-half of the total milage of railways in British India has a metalled road parallel and within ten miles of it, and probably most of the roads were there first. The evolution of the metalled road system has been from the trunks outwards. The Grand Trunk Road was there before the railway. As trunk railways were built the main feeder roads were first developed along the important lines of trade, connecting populous centres, to be followed in due course by the construction of branch railways on much the same alignment; and this process has continued and has taken the form of the successive provision of what may be called branch and sub-branch metalled roads often being overtaken by the provision of railways along the routes first developed by the roads. In some few cases a metalled road may have been deliberately jettisoned with the advent of a

railway*, but generally the roads remained, serving mainly local purposes, until motor transport gave them a new character, brought about the revival of some of those previously abandoned, and gradually induced increased expenditure on maintenance, and, by absorbing a larger proportion of available revenues, arrested to some extent the growth of further metalled branches and sub-branches. The advent of motor transport has also to a less extent brought about the metalling of new arterial or trunk roads, some of them parallel with a railway, the policy of having at least every district headquarters served by a road linking up with the whole provincial system having been adopted in certain cases.

The process of evolution on these lines has continued more or less up to the present day, and, as an instance based largely upon the personal knowledge of one of us, we would mention that in the Punjab, during approximately the last two decades, there has apparently been the following development. Some 300 miles of metalled roads parallel with railways have been revived or new roads constructed; some 700 miles of other metalled roads have been built, excluding those that were afterwards duplicated by a parallel railway; some 250 miles of railways have been built more or less parallel to existing metalled roads; and, in the case of a suspended railway project of about 100 miles, some 43 miles would be parallel to existing metalled roads, 17 miles parallel to projected metalled roads and only 40 miles on what may be called a virgin alignment.

This illustration may not be typical but at least suggests what may happen when railways and roads are independently planned, and, while in future it may be possible to avoid any substantial addition of metalled roads parallel with existing railways, it is unlikely that many schemes of new railways can be financially justified parallel to metalled roads on which motor transport will take much of the passenger traffic. Until, therefore, the probable future development of railways can be foreseen in a general way, a comprehensive plan of road development may tend to block the future development of any railways that cannot be justified solely for the carriage of merchandise, unless, with the construction of main feeder roads, the prospect of having eventually to prohibit motor transport on them, as a condition rendering possible the provision of a branch railway, is recognized. For these reasons we venture to think that the skeleton survey of existing conditions which we now put forward will at least assist in an appreciation of the situation and in an estimate of the extent to which it is reasonable to hold that in certain localities the development of railways has or has not reached a final form satisfying present needs, upon which a plan of further road development can be grafted without fear of adding to the difficulties of the future.

3. *Provincial Maps.*—As illustrating the salient features of the existing position to which we desire to draw attention, we have pre-

* Report of the Indian Road Development Committee, 1927-28, para. 17.

pared maps of the major provinces* to the scale of 16 miles to an inch, which we reproduce herewith. These, being designed for a particular purpose, do not purport to be accurate road maps for the purpose, for instance, of a motor guide, but aim at throwing into relief the main features of the existing position, such as the extent to which metalled roads and railways are parallel to each other and the proportion of the total areas which, in areas having, on the basis of civil districts, a population of 100 per square mile and over† is more than ten miles from any railway. As we attach considerable importance to what may be called the area "commanded" by railways, that is a belt ten miles on each side, it is necessary to explain why the figure of ten miles has been adopted.

Having regard primarily to the needs of agriculture, there appear to be two factors which determine the economic mesh of railways. On the one hand there is the obvious fact that, once an area has reasonable access, within what may be called the economic radius, to a market or outlet on the railway, the provision of an additional railway will not in that area substantially increase production, and, therefore, the addition of a second railway would mean that two lines have to be supported on the traffic which previously went to one. On the other hand there is the question of the economic radius for carriage by road, and while the system of marketing varies in different parts of India, the economic radius is perhaps much the same. In the *mandi* system in the Punjab, produce is marketed at regular grain and cotton markets or *mandis* on the railway, so spaced that they are not so close together as to reduce the volume of business to an extent which affects the prices offered, and not so far apart as to render it uneconomical to carry produce to them, and this economic radius appears to be about twelve miles. Elsewhere, where this system does not prevail, but produce is marketed in the village and despatched from the nearest way-side station, it still seems to us that within a belt of ten miles on either side of the railway, given good roads, there will be no great difficulty in carting imports and exports. Moreover, be the system of marketing what it may, it seems reasonable to suggest that within ten miles of any existing railway, produce is unlikely to be diverted from existing channels by the provision of other facilities, except possibly in the case of special crops such as cane. Finally, while the use of mechanical transport for agricultural marketing is, we believe, unlikely to develop with any rapidity; yet the stimulus to local travel which the motor bus provides, the improvement of roads, and gradual improvement in the breed of cattle will, if anything, tend to increase the distance up to which

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* We have not been able to prepare a map of the North-West Frontier Province. We are, of course, not dealing with Burma at all.

† We have based our comparative statistics on the area having not less than this density of population so as to exclude mountain, forest and desert areas not susceptible of much development at present. The Civil District is not really a small enough area for the basis of this separation but is the best approximation possible in the time at our disposal.

the individual is prepared to travel in order to reach his market, so that, even without the use of mechanical transport, the economic radius for marketing, and hence the area commanded by existing railways, will, if anything, tend to increase.

Thus, in calculating the proportions of areas which are more than ten miles from any railway and illustrating these on the map, our suggestion is that a rough and ready means is provided of envisaging the extent to which further railway development is likely. The maps will also show at a glance to what extent any projected railway taps country at present uncommanded and to what extent it merely duplicates the present facilities. And the uncommanded areas will frequently be found to be those of lowest productivity in which a railway is unlikely to be justifiable.

4. *Statistical examination.* (*a*) *Parallel metalled roads and railways.*—In Appendix A we give for the nine Governors' provinces and Sind, that is excluding Burma, the milage of railways; metalled roads; improved or motorable unmetalled roads; metalled roads and railways parallel and within ten miles of each other; and the percentage of metalled roads parallel with railways and of railways parallel with metalled roads. It will be seen that, in the aggregate, 22 per cent. of the milage of metalled roads are parallel with railways or, if we exclude Madras, 30 per cent.; 48 per cent. of the railways have metalled roads running parallel with them, the extreme case being the North-West Frontier Province with 94 per cent., the Central Provinces being the next with 73 per cent., and the United Provinces, Madras, and Bombay Presidency following with some 60 per cent. We have referred to this matter in detail in our provincial reports when discussing the existing state of motor competition with railways, and it is clear that the process of evolution which we have described has created great opportunities for direct competition. We have not, moreover, in the time at our disposal been able to ascertain what proportion of the improved or motorable milage of unmetalled roads is also parallel with railways, and, while we do not think that the proportion would be found to be so high as in the case of metalled roads, yet it is certain that a greater length of railways has a motorable road of sorts running parallel with it than our figures show, although, in the case of improved unmetalled roads, competition is probably only light and seasonal.

(*b*) *Areas commanded by railways.*—In Appednix B we give a somewhat full statistical picture of the existing condition of communications in the areas which have a density of population of 100 per square mile and over. Columns 1 and 2 give the total area involved and the mean density of population for that area. Column 3 gives the proportion of the whole area which is more than ten miles from a railway or "uncommanded". It will be seen that in the Punjab, the United Provinces, Assam, and Sind less than one-third of the whole area is uncommanded, and much of this evidently includes considerable tracts of low productivity not capable of supporting a railway. In Bengal only 40 per cent. is

uncommanded, and, if only inland steamer routes, and not country boat routes, are taken into consideration, the area more than 10 miles from a railway or a steamer route only amounts to 20·50 per cent. The uncommanded area in the Central Provinces, Bombay Presidency, and Madras is something over one-half of the whole, but here again, having regard to large blocks of forest and hilly country, it cannot be supposed that there is necessarily any large field for railway development.

(*c*) *Roads and railways in relation to area.*—In Columns 4—7, Appendix B, we give the length of railways and motorable roads per 100 square miles of area and in Columns 8—11 we give the converse of this, that is the area which is on the average dependent upon one mile of railway or roads of different classes, and it is from these latter columns that the position can be most easily appreciated. The smallest area per mile of railway and, conversely, the largest railway milage on the basis of area, is in the United Provinces where there are on the average only 18·8 square miles for every mile of railway. If the railways were exactly evenly distributed over the whole area, then the position would be that every railway would have a belt of country of 9·4 miles in width on each side of it and dependent on it, or in other words that no one would be more than 9·4 miles from a railway. The condition in the Punjab and Bengal is in this respect substantially the same, while in Bengal it must again be remembered that there is in addition a very large milage of inland waterways. With the exception of the Central Provinces and the North-West Frontier Province the condition elsewhere is that on the average there are between 25 and 30 square miles of area for every mile of railway.

Turning to the figures regarding roads, and in particular all motorable roads including improved unmetalled roads, it is seen in Column 10 that Madras is in the relatively enviable position of having only 4½ square miles of area for every mile of motorable road, so that, if these were evenly distributed throughout the area, the greatest distance from them would be about 2¼ miles. In this respect Madras is closely followed by Bombay Presidency and then at a distance by the Punjab, the North-West Frontier Province, the United Provinces and the Central Provinces where the condition is 21 square miles per mile of motorable road, or a belt on the average of ten miles on each side of every road. In Column 11 will be found the area per mile of road, taking into account all roads maintained by public authority, and to this column we attach considerable importance as showing that, if the improvement of the whole system could be brought about by the provision of the minimum of bridging and cheap "improved earth road" development, then the condition would be as follows: In Bengal there would be on the average only 1·8 square miles of area for every mile of passable road; in Sind, the United Provinces and Bihar and Orissa there would be between 2 and 3 square miles of area per mile; in the Punjab and Madras between 3 and 4 square miles; and in Bombay Presidency, Assam, and the North-West

Frontier Province between 4 and 5 square miles. We do not think that the figure in the case of the Central Provinces accurately represents the position, because in the statistics with which we have been furnished only "professionally aligned" unmetalled roads have been included, and there must in the Central Provinces as elsewhere be a large milage of district and local rural roads which have gradually been developed from primitive tracks and upon which the countryside depends for its access to roads of a superior class.

(*d*) *Roads and railways in relation to population.*—In Columns 12—15, Appendix B, we show the existing position in respect of roads and railways on the basis of population. Taking railways, it will be seen that, although Bengal has more railways on the basis of area than any province except the United Provinces, yet, owing to the high density of population, it has also the greatest population per mile of railway, *i.e.*, 14,117, of any of the nine provinces. Madras and Bihar and Orissa have over 10,000, Bombay, the United Provinces, the Punjab, the Central Provinces, Assam, and the North-West Frontier Province between 5,000 and 10,000 and only Sind less than 5,000 persons per mile of railway. Turning to metalled roads, excluding the abnormal condition in Sind and Assam, it will be seen that the number of persons per mile of metalled road varies from 1,950 in Madras to 13,900 in Bengal. In Column 15 it will be seen that, excluding the abnormal case of Sind, the number of persons dependent upon one mile of road, taking all roads maintained by public authority, is remarkably uniform.

5. *Village connection with the road system.*—It is clear from this general picture that, while the general improvement of all roads in charge of public authorities would bring facilities within relatively easy reach of all, yet there remains the important link in the chain of the actual connection between the village and the public road. In our questionnaire* for discussion with district authorities and the representatives of local bodies, we enquired the number of villages of a population of 1,000 and over which are not on any public road. We have referred to this matter in the detailed reports of our discussions in each province and we would here merely say that, while conditions naturally vary very greatly, it appears that there is a very large number of important villages which are not connected with any public road save by a village cart track which may or may not be maintained by co-operative action among the villagers.† We have found a very great difference of opinion as to the extent to which the absence of direct connection with the public road is a serious disadvantage in the case of large villages, and it is clear that, where the disability is keenly felt, the expenditure necessary to provide a modest connection by a reasonably well maintained unmetalled road would, in the aggregate, amount to a very great sum indeed. We think that a comprehensive survey of

* Reproduced at Appendix O.

† *Cf.* Report of the Royal Commission on Agriculture in India, para. 307.

the requirements should be able to include an estimate of the expenditure necessary to meet this need on some rough basis of area, but we are uncertain how far it might be possible or justifiable to include village link roads in any comprehensive plan.

There can be no doubt that this aspect has considerable bearing on the future of road development, because, apart from the fact that the full benefit of improvements cannot accrue to rural transport so long as the large village is not connected, there is the difficulty, to which we refer later, that so long as the village is separated by a mile or two from the public road, the objectionable features of the bullock cart from the point of view of modern road surfaces will not easily be corrected.

6. *Recent expenditure on roads.*—In Appendix C we show the expenditure from revenue on road construction and maintenance in eight Governors' provinces, from 1923-24 to 1929-30. Construction, of course, includes all original works, that is anything of the nature of a permanent improvement to an existing road as well as the actual construction of new roads and bridges. We shall have occasion in a subsequent chapter, when comparing taxes on motor transport with the road bill, to refer to the recent increase in expenditure, and we would here merely state that the total expenditure from revenue during 1929-30 amounted to Rs. 609·5 lakhs and that this was only about 10 per cent. in excess of the expenditure during 1926-27, the figures in respect of which have been analysed at Statement E in the report of the Indian Road Development Committee* as percentages of various revenues applied to roads, and in the form of the incidence of road expenditure per head of population. That statement shows that the total expenditure in that year, excluding Burma, varied from 2·3 annas in the case of Bengal to 6·8 annas in the case of the Central Provinces, per head of population.

7. *Lack of balance in existing road system.*—A broad view of the road system in British India as a whole suggests that it has become somewhat unbalanced in that the general standard and condition of trunk and main roads is relatively far superior to that of local feeder or district roads, which are in the main unmetalled. We do not suggest that, even in a perfectly balanced system, all roads should be bridged to the same standard or should have comparable surfaces, the only difference being the more expensive materials used on the more heavily trafficked roads. Obviously, unmetalled roads have definite limitations and they can scarcely offer in areas of heavy rainfall a surface reasonably passable at all seasons. But we do think that, having regard to the practically, if at present not financially, possible maintainable standard, there is a great contrast in the prevailing standards, and that, so long as this is so, the benefit of motor transport will be restricted and it will tend to concentrate on the metalled roads including routes parallel to half the total railway mileage. We are aware that in many parts of India soil conditions are such that the provision of a good unmetalled

* Report of the Indian Road Development Committee, 1927-28.

road is a matter of great difficulty, but we believe, on the other hand, that there is a very great milage which could carry a light motor bus service in addition to country carts, if it were improved and properly maintained.

8. *Possible causes of lack of balance.*—The reasons why the road system has tended to become unbalanced are many. The development of metalled roads seems to have been from the trunks outwards, and with the development of Local Self-Government there has gradually come about a distribution of roads between provincial and local authorities, the main and more generally used routes being the provincial care, and local routes that of local bodies. Local Governments have been steadily pursuing a policy of road development, but with this distribution of roads and the principle that expenditure should be under the control of the authority responsible for raising the necessary revenues, this development has largely been on "Provincial" roads. In the earlier stages of District Board development, the maintenance of the other roads was one of their principal functions, and they were financed by a cess on the land revenue, frequently called a road cess. It is questionable whether, had the field of activities of district boards remained more or less constant, that cess would have been adequate for the maintenance of roads in modern conditions, and we doubt whether this would have been the case for two reasons. The first is that it probably costs approximately from five to ten times as much to maintain a metalled road as it does to maintain an unmetalled road, and the gradual metalling of a proportion of the roads in charge of district boards, out of occasional revenue surpluses or provincial grants, has greatly increased the maintenance liability.

Another reason, we think, is that, with the passage of time and the gradual substitution of the growing of money crops for purely subsistence farming, traffic to markets on rural roads has increased, while at the same time there has been a tendency to make a greater use of bullock carts and less of pack animals, thus throwing a greater burden for maintenance upon local bodies and subjecting all roads to greater wear and tear.

But, if earlier appropriations would now be inadequate, a still more important factor has possibly been the expansion in the activities of local bodies in other directions which has thrown an additional burden on their resources.* The economical maintenance of roads depends upon regular attention and outlay upon casual labour and materials, while the bulk of the expenditure in other directions may be upon more or less regular establishments. At times of periodical retrenchment it is the road expenditure which can be reduced with the least immediate dislocation. The reduction is quickly followed by deterioration, which in time requires disproportionate expenditure for its repair, and if the grants are not quickly restored a stage is reached when the previous maintenance provision is quite inadequate or may be useless until the roads are

* *Cf.* Report of the Royal Commission on Agriculture in India, para. 307, page 375.

restored to a maintainable condition, for which there are no resources. Thus the bad unmetalled road has come to be regarded as an incurable evil, and abandoned as hopeless. With the exception of recent developments in the reconditioning of unmetalled roads by mechanical graders and tractors, notably in the Punjab and Assam during the last five years, such expenditure as has been incurred during the last decade has in consequence tended to be more and more upon the metalled roads. This has been the result of the process described above, of the advent of motor transport, and of the desire to provide facilities for its extension merely in the form of more metalled roads. More recently, wear and tear on metalled roads generally has increased owing to the superposition of mechanical transport upon roads used by bullock carts (the combination being more destructive than either separately) and available resources have in a large measure been directed to the improvement and strengthening of these.

9. *A possible remedy.*—We are here attempting a broad survey and are forced to generalise, and we think it reasonable to say that the general position is that unmetalled roads are almost entirely in charge of local bodies and that local bodies had generally discontinued maintaining them even before the present acute financial stringency; that their resources are now wholly inadequate even for maintenance; and that the provision of local funds for reconstruction seems to be impossible. If then a proper balance is to be restored, it will apparently be essential first to consider what steps can be taken to secure that unmetalled roads in general should be adequtely maintained in the future, and then to set about plans for their restoration to a maintainable condition.

10. *The effect of the expansion of commercial transport.*—With the great expansion in the number of motor buses from the year 1925-26 onwards, the tendency which we have described, to concentrate expenditure on metalled roads to the neglect of others, became, we believe, more marked. Thus, while the community is paying to a greater or less extent for the luxury of duplicate services along half the railway mileage, it is being deprived of developments elsewhere. At the same time the effect of this competition upon railway earnings was causing grave misgivings and was in part responsible for the institution of the present enquiry. That motor transport has not at present developed in competition with railways to an extent comparable with that in other countries, or to an extent to have caused an inroad into railway revenues comparable with the loss due to the general depression, has, we think, been shown by the figures which we have been able to put forward after consulting railway administrations and others; but that it is in itself to an undue extent employed in competition, partly owing to lack of balance in the road system, is, we think, probable.

11. *Representation of the case of motor industry.*—In addition to discussing the various matters covered by our enquiry, with local Governments and Railway Administrations, we have had the benefit of hearing the views of the motor transport industry as put forward

by the branches and Council of the Indian Roads and Transport Development Association and other bodies. The representation made to us by that Association covers, we believe, the main grounds of the case of motor transport, and we reproduce it as Appendix D. In drawing up our report, the various matters brought to our notice by the Association have been constantly borne in mind, as well as the other points of view, and we believe that we have dealt with them adequately in our report, although, owing to the comprehensive nature of the memorandum, it is not possible to deal with it all in one place.

CHAPTER II.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

12. *Terms of reference.*—We were instructed to examine during the course of our tour the material in the possession of the railways and to ascertain therefrom where motor services are at present competing with railways, and to what extent this competition has affected railway earnings. It was recognized that it would not be possible for us, in the time available, to make a comprehensive survey of this matter, but it was felt that, even if only particulars in regard to selected instances could be collected, it would be possible to form some general conclusion.

13. *Difficulties in framing accurate estimates of losses.*—Quite apart from our investigation we found that many railway administrations had already, in their own interests, deputed staff to observe and report on road motor services running in competition, and although such checks could only be periodical, consistent with the economy essential at the present time, they had enabled the collection of a certain amount of material upon which an approximate estimate of losses could be based. In some cases we were able to suggest reasonable modifications of the estimates given by railways, in view of the experience and opinions on the subject of unemployment among buses which we collected at the many meetings we had with local authorities. In certain cases we have attempted to cross check the figures, using methods as variable as possible, but we must emphasize that the time at our disposal has been limited, and the figures we give below must be treated with all the reserve due to conjectural estimates; though we do not think that they are very wide of the mark.

In the next chapter, in dealing with the control and regulation of public motor transport we have emphasized the need of a proper census of road motor transport being taken in the interests not only of railways but of local authorities and the Police, and, if this is done, it should be possible for all concerned to be supplied with fairly accurate figures of the number of vehicles plying over the principal roads from time to time and of the traffic they carry.

14. *Losses estimated by railways.*—Subject to the above remarks we submit below our estimate of the annual losses which are being incurred by railways due to existing motor competition. The losses are shown by Provinces and by railways:

Estimated annual losses to Railways due to motor competition.

——	A. B.	B. B. C. I.	B. N.	B. N. W.	E. B.	E. I.	G. I. P.	N. W.	M. S. M.	S. I.	Total.	Reference to provincial reports.
	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	Rs. (lakhs.)	
Madras . .	..	..	1·50	..	..	..	..	.	15·71	13·50	30·74	Madras, paras. 16, 21 and 28.
Bombay . .	..	6·65	..	..	..	..	7·50	..	4·70	..	18·85	Bombay, paras. 14, 19 and 22A.
Bengal . .	0·31	..	0·86	..	5·00	4·22	..	..	..	...	10·39	Bengal, paras. 14, 18, 20 and 22.
United Provinces .	..	14·52	..	5·00	..	21·77	4·13	..	..	..	45·42	United Provinces, paras. 15, 20 and supplement.
Punjab . .	..	..	..	..	..	..	0·67	33·00	..	..	33·67	Punjab, para. 18.
Bihar and Orissa .	..	..	2·86	..	..	4·02	..	..	..	..	6·88	Bihar and Orissa, paras. 17 and 20.
Central Provinces .	..	..	9·00	..	..	..	6·75	..	..	..	15·75	Central Provinces, paras. 16 and 22.
Assam . . .	0·25	..	..	..	..	..	..	..	..	..	0·25	Assam, para. 9.
North-West Frontier Province.	..	..	..	..	..	..	..	1·33	..	..	1·33	North-West Frontier Provinces, paras. 13 and 14.
States . . .	..	13·83	..	..	..	..	1·45	4·67	3·17	..	23·12	
	0·56	35·00	14·22	5·00	5·00	30·01	20·50	39·00	23·61	13·50	186·40	

These figures cover the losses due to passenger traffic only. The use of motor transport for the carriage of merchandise in competition with railways has so far not developed to any very great extent as we show later. Only one railway, the North Western, has furnished us with an estimate of the annual losses due to this, the figure given being Rs. 4½ lakhs.* It would, therefore, appear that railways are at present probably losing something in the neighbourhood of Rs. 1,90,00,000 due to the competition, or slightly under 2 per cent. of the earnings of a normal year—these being about Rs. 100 crores.

In submitting this estimate, however, we think that it is probably on the high side because railway administrations agree that the figures take no account of the appreciable short distance traffic, now carried by buses, which was formerly carried by country carts, etc., and which, even in absence of motor transport, would not come to the railway. We have, of course, no means of estimating this traffic, but we feel that it is a substantial factor which cannot be overlooked.

Further, it should not be forgotten that the development of motor transport has brought considerable business to the railways in the transport of petrol; the earnings of all first class railways from petrol during the year 1930-31 having been Rs. 53,63,000, an increase of about 12 lakhs over the previous year.

On the other hand, we think there is little doubt that with trade revival, better organisation of motor transport, and the improvement of roads parallel with railways, motor competition with railways will increase. The motor bus provides in many ways, certainly for short distances between towns, a rapid and frequent service which the railway can hardly hope to provide, especially over a single line, of which the greater part of the route milage of railways in India consists.

15. *Carriage of merchandise by motor transport.*—We have already stated that the carriage of merchandise by motor transport has not developed to any great extent. The only railway administration which gave us any figures of losses due to this cause was the North Western Railway, and that system is chiefly affected by organised motor transport agencies centred in the city of Amritsar.† These agencies do not usually own motor vehicles, but they collect goods in the city and charter motor vehicles for the conveyance of goods to many outlying towns, and the rates charged are usually less than the railway rate, possibly due to the extent of unemployment now prevailing among motor vehicles in the Province. The North Western Railway also reports the conveyance of vegetable and other perishables by motor transport for considerable distances.

A certain amount of competition for the carriage of merchandise has been reported‡ by the East Indian Railway and the Eastern

* Punjab, para. 24.

† Punjab, para. 23; North-West Frontier Province, para. 14.

‡ Bengal, paras. 15 to 17.

Bengal Railway in the Province of Bengal, but neither of the railways has furnished us with estimates of the loss occasioned thereby.

It is clear that this form of competition is yet in its infancy, but we feel that with the general improvement of roads, the possibility of improved motor vehicles for carrying merchandise, and the revival of trade, this form of competition will increase and its development will need careful watching by railways.

16. *Range of motor transport activity.*—While the range of motor transport for the carriage of passengers is usually short, it is not always so. In our Provincial Reports we have drawn special attention to cases where passenger buses are engaged in services in competition with the railway for distances over 50 miles, and we would call attention to the following instances:—

	Miles.
Bombay*—	
Bombay-Poona	113
Nasik-Kalyan	89
Kolhapur-Poona	135
Bagalkot-Belgaum	85
Dharwar-Kolhapur	125
Madras†—	
Madras-Vellore	82
Central Provinces‡—	
Nagpur-Amraoti	96
Nagpur-Chhindwara	92
United Provinces§—	
Fyzabad-Barabanki	68
Benares-Allahabad	82

We were also informed by the Agent of the East Indian Railway that during the Kumbh Mela at Allahabad, in January 1930, a very heavy bus service sprang up between Cawnpore and Allahabad —a distance of 118 miles.||

These particulars suggest that under the present conditions the range of motor transport may considerably increase and affect long distance passenger traffic on the railway as well as short distance. The long range services moreover are not confined to carriage of passengers. The North Western Railway, for instance, reports¶ the carriage of fresh fruit from Rawalpindi to Delhi—477 miles, and piece-goods from Amritsar to Sargoda—186 miles, and many other similar instances; and the East Indian Railway states** that

* Bombay, paras. 12 and 22.
† Madras, para. 15.
‡ Central Provinces, paras. 15 and 19.
§ United Provinces, paras. 16 and 19.
|| United Provinces, para. 16.
¶ Punjab, para. 22.
** Bengal, para. 15.

the conveyance of vegetables, country tobacco, and miscellaneous articles by lorries is being undertaken between Calcutta and Katwa, 117 miles; Calcutta and Raniganj, 120 miles; and Calcutta and Asansol, 131 miles. These long range activities all point to the possibility of further intensive competition with railways when trade revives.

17. *Effect of competition on light railways.*—There can be little doubt that the effect of motor competition was first felt by the light railways and they have probably suffered proportionately more than the larger lines, being peculiarly susceptible to attack from the new form of transport. The Central Provinces probably possess the largest concentrated system of light railways, and we have, therefore, in our report on these Provinces, given at some length our reasons for thinking why the effect of motor competition on light railways has been so serious.* It is questionable whether a light railway, limited as it is to a single line, with comparatively slow and infrequent trains running at irregular intervals, can ever hope to compete with a speedy bus service running along a parallel road, and it is a feature of the Central Provinces that a large percentage of the light railway milage has a good metalled road running alongside it. The earnings of the Central Provinces light railways and the Satpura railways have seriously declined, the decreases due to motor competition having set in before the general trade depression and having been accentuated since. In a later chapter, in which we treat of the future policy of railways in regard to motor competition, we deal more fully with this point.

* Central Provinces, paras. 25 to 30.

CHAPTER III.—CONTROL AND REGULATION OF PUBLIC TRANSPORT.

18. *Case for co-ordinated control of all forms of public transport.* A report recently submitted to the Interstate Commerce Commission by its Attorney-Examiner, Mr. L. J. Flynn, on an examination of the road transport competition from which railroads in the United States are suffering, is prefaced by the following remark which we think has some relevance in India:—

> " The transportation machine cannot function with progressive efficiency part regulated, part unregulated: co-ordination of transportation agencies cannot reach its economic possibilities under this anomalous condition."*

The view thus epitomised is that of the modern school which would replace *laissez-faire* by economic planning and unrestricted competition by a sort of nationally controlled rationalisation. We are not concerned with abstract political theory, but the facts are that, in India, the main and established form of transport is controlled in every direction, the more so perhaps because railways are largely nationalised, while motor transport is, by comparison, subject to trifling control. In the nascent stage of the latter public control has generally been the minimum compatible with reasonable safety. Comfort, amenities and convenience have been left to adjustment by the ordinary laws of supply and demand and by competition. The development of the industry has now apparently outrun the regulations and the executive machinery; and a stage has been reached when the evils arising from freedom from control and from competition probably out-weigh the benefits. Some general tightening of control is admittedly necessary in the interests of the public†, so as to secure a safe and reasonably comfortable and convenient public service at the lowest cost. The suggestions for such control which we shall review would at the same time tend to bring competition with railways on to more level terms, but we wish to make it clear that they are such as would, we believe, be acceptable to informed public opinion, as covering intrinsic public requirements from motor transport as such. If, beyond these, anything further is deemed to be necessary to protect the railways from competition, this should, we feel, be effected by direct rule applicable to competitive routes, rather than by any general tightening of the control of motor transport in excess of that necessary to its healthy development in rural areas, where it requires encouragement and the minimum of interference.

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* " Co-ordination of Motor Transportation " by Leo. J. Flynn, Attorney-Examiner to the Interstate Commerce Commission, U. S. Printing Office, Washington, 1932.

† Madras, para. 31-B; Bombay, para. 30; Bengal, para. 32; United Provinces, para. 30; Punjab, para. 38; Bihar and Orissa, para. 32; Central Provinces, para. 35: North-West Frontier Province, para. 18.

19. *Control of transport in India.*—Railways are controlled* generally under the provisions of the Indian Railways Act, while the control of motor vehicles is a provincial reserved subject under item 33 (E), Schedule I, Part II, of the Devolution Rules, and is exercised by provincial rules under section 11 of the Indian Motor Vehicles Act, 1914. Motor transport interests have complained that existing motor vehicles rules are unnecessarily diverse, for example in respect of the number of passengers that may be carried upon a bus of a given chassis capacity. On the other hand, in our investigations we gathered the general opinion that, while the existing rules might with certain modifications suffice to ensure a reasonably good public service, they are not being adequately enforced owing partly to the expense involved and partly to the irresponsibility of the owner driver.

20. *Unfairness of competition alleged by railways.*—The railway case in regard to differentiated control is as follows:—

(*a*) Public motor vehicles are not adequately inspected.

(*b*) Public motor vehicles are systematically overcrowded.

(*c*) Whereas railways are restricted by many sections of the Railway Act, no corresponding obligations are placed on motor transport.

(*d*) Railways are required to follow the Hours of Work rules: the motor transport industry is not.

(*e*) Railway operating staff are carefully examined as to their capabilities: the drivers of motor vehicles are not so strictly examined.

(*f*) Accidents on railways are subjected to exhaustive enquiries; but the same attention is not paid to accidents to public motor vehicles.

We comment on each of these points—

(a) *Inspection of vehicles.*—We think it is true that while railways and rolling stock are subjected to close inspection to ensure the safety of the travelling public, the inspection of public motor vehicles is not so rigid. In many of the provinces we visited we were told that there were difficulties in the way of inspecting the latter as strictly and as regularly as is desirable.

(b) *Overcrowding.*—We think that the contention of railways in regard to overcrowding is frequently correct, there being few localities which we visited where complaints of this were not made. Unemployment among buses seems, paradoxically, to aggravate it: for owners then arrange a roster among themselves and when a driver gets a rare turn he is impelled to overload. Overcrowding is not unknown on Railways, but we think that while Railways attempt to correct it, its prevention in public service motor vehicles is often difficult.

* By the Governor-General in Council, through the Railway Department (Railway Board) of the Government of India.

(c) *Restrictions imposed on Railways by the Railway Act.*—Railways point out that the Act compels them to keep accounts, to give tickets for passengers and receipts for goods, and to issue time, fare and rate tables. Generally no such obligations are imposed on motor bus proprietors.

(d) *Hours of Employment.*—Some railways are bound by statutory rule to limit hours of work, partly in the interests of safety and partly on humanitarian grounds.* At present there is no limit prescribed in the case of a bus driver although in Bombay regulations on the subject have been circulated for opinion.†

(e) *Examination of Staff.*—Railways also believe that motor drivers licenses are often granted without strict medical examination and driving tests. The medical examination of the railway operating staff and tests of fitness are and must be strict. We believe that most provincial motor vehicle rules now prescribe both medical examination and a driving test, and clearly these are necessary and should be strict.

(f) *Enquiries into accidents.*—Railways also complain that accidents to public motor vehicles are common, but that the importance attached to them is less than to accidents on a railway, which are the subject of a full enquiry, to fix responsibility. Records are kept of all railway accidents, but are not compiled or published regarding road accidents. In many provinces accidents to public motor vehicles appear to be relatively rare, but we have seen no statistics. On the other hand, we were told in some places that the public definitely disliked motor buses because of risk of accidents or road side failures, but used them because of their convenience.

21. *Suggestions for the stricter control of public motor vehicles.* Motor vehicles rules have been in force since the passage of the Act but the bus is of more recent date. Some local Governments have recently recast or amended their rules, but our impression is that the use of motor buses has outrun the provisions of the rules and existing machinery for their application, and owing to financial stringency and a natural disinclination to elaborate rules, control is perhaps inadequate to the requirements of the case. In passing we would mention also that, in so far as additional expen-

* The hours of employment regulations have been applied to the North-Western, East Indian, Great Indian Peninsula, and Eastern Bengal Railways; and all other lines have been asked to implement them as far as possible without incurring extra expenditure. At present the regulations apply to operating staff other than running staff, but the intention is finally to apply them to running staff as well.

† Bombay Gazette, dated the 26th August 1932. We reproduce the draft rules at Appendix E.

diture is involved in the maintenance of roads subject to excessive speeds and an unnecessary number of buses, loose control is costing money.*

22. *Public complaints regarding motor transport.*—We have stated the criticism of the railways and we will now endeavour to state the public point of view. Motor buses are a great public convenience and highly popular, but there is in some provinces at least a growing body of criticism of certain features, many of which are, we believe, susceptible of relatively easy correction.† The more common complaints are:—

(i) *Overcrowding.*†—We have explained how the roster system encourages this. From discussions in meetings and road-side conversations, we think the complaint is common. A bus starting from a town may not be able to evade police observation and may not be overloaded, but the number of extra passengers picked up *en route* often depends only upon the extent to which the original passengers will bear discomfort or upon the lack of any additional available space in, round, or upon the bus. For every bus that is caught overloaded, many others get timely warning of police activity; no one wants to be involved in a case either as witness or accessary; and the surplus passengers are readily persuaded to fade out of sight at the first sign of danger.

(ii) *Irregularity in starting.*†—A bus will start when it has a full load, or when the driver can be prevailed upon. We came across one at the road-side with four passengers seated in it; the first had been there for two hours and there was a prospect of several hours' further delay before the bus would start, either when a sufficient number of passengers offered; or when other waiting drivers insisted upon its departure; or when the few passengers agreed to pay extra.

(iii) *Irregularity in arrival.*†—When inspection is regular, one puncture may find an efficient spare ready, but a second is often fatal to further progress. Mechanical failures and shortage of petrol are not uncommon, and in fact there are general complaints regarding this.

(*iv*) *Accidents.*†—On the whole, while failures may be frequent accidents causing loss of life or injury are less so but they often appear to be prevalent enough to give

* In a report to the Technical Committee of the Interstate Road Authorities of Australia upon "Weight and Speed Regulation of Road Vehicles" by Mr. R. J. Kemp, M.Inst.C.E., M.I.E.(Aust.), Commissioner, and Mr. D A. Crawford, L.S., A.M.I.E.(Aust.), Chief Engineer, Queensland Main Roads Commission, the following passage appears in respect of the cost of roads due to over-loading and speeding:—"It would pay to have much more effective policing of our roads, even if it cost Australia £100,000 a year to do so."

† Chap. IV, all Provincial Reports except Sind.

grounds for complaints that a bus journey is attended with considerable risk. There being no statistics of accidents and no analysis of the more usual causes, we would hesitate to say to what they are usually due. One cause mentioned to us on more than one occasion was competition between buses involving racing in order to arrive first at the next likely pick-up place. Another is possibly overcrowding to the extent of impeding the vision of the driver or hampering him in the control of the vehicle. A third is bad or reckless driving.

(v) *Rudeness and indifference of drivers.*—This complaint is not general but was voiced in several places. It probably arises out of overcrowding and the depressed state of the business.

23. *Reasons for unsatisfactory position.*—We attribute most of the objectionable features, which we have outlined above, to unrestricted competition. We shall show that the economical fare for a motor bus appears to be in the neighbourhood of 5 pies per passenger mile.* Competition between buses and with the railway has on many routes cut the fare to between 3 and 4 pies or lower,† at which rate the return is inadequate for the proper maintenance of the vehicle, and when only occasional trips are obtained the driver is impelled to overcrowd his vehicle in order to gain bare subsistence and the price of petrol. In some cases the number of licenses or permits issued to buses to ply on any route are limited, but this is not generally the case, and where there is no limit there is acute competition, and, moreover, a tendency to concentrate buses on the competitive routes between populous centres, where at least an occasional turn can be obtained, rather than to open up and develop new routes. If an owner tries to build up a little business on a route which offers enough traffic for one or two trips a day each way, he is liable to competition by the first comer and may be deprived of the fruits of his enterprise, so he eventually gravitates to a main inter-urban route to swell the band of competitors. When competition commences it frequently knows no limits and fares are cut below the level at which any return can be obtained. All this results in the business being often in the hands of insolvent adventurers who have so little to lose that they are capable of any infringement of regulations which will bring in a small additional profit; and, to such an extent has this occurred, that we were informed by one District Magistrate that he had 2,000 cases under the Motor Vehicle Rules pending in his district.

24. *Limitation of number of vehicles on any route.*—The suggestions which we put forward in the following paragraphs are based

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* *Vide* para. 29.

† Madars, para. 31-A and Appendix 4; Bombay, para. 32; Bengal, para. 13; United Provinces, para. 29; Punjab, para. 29; Bihar and Orissa, para. 28; Central Provinces, para. 32; North-West Frontier Province, para. 16.

upon impressions we have received, and represent, we believe, what responsible opinion would support in the direction of control. First and foremost the number of motor vehicles licensed for a route should be limited to the number for which that route offers employment. We admit at once that there is the danger that, with a limited number of owners, it would not be difficult to make a pool approaching a monopoly. But the cost of operating motor transport can be determined with sufficient accuracy to allow of fares being fixed by rule at a level not greatly different from that which would obtain under healthy competition, and in any event we think that the evils attending unlimited competition are now such that the alternative would be preferable. We have even met a large body of opinion definitely favouring monopolies if strictly controlled.* There is, of course, the difficulty in rigidly limiting the number of buses on any route, of the seasonal and other fluctuation of traffic. Nevertheless we think that something might be done and that if limitation to routes is not practicable, limitation within areas might be. In any event we believe that limitation of numbers or even a controlled monopoly will be necessary to encourage enterprise on less populous routes, and we would draw attention to the earth-road-maintenance monopolies in certain provinces.†

25. *Time-tables.*—Motor transport in rural areas has developed to a stage where people rely upon it and where it is reasonable, we believe, that it should run more or less to time-tables.‡ In the case of concerns operating under a monopoly or semi-monopoly conditions, it appears that the spontaneous issue and publication of time-tables is common and has proved to be an advantage both to the proprietor and the public. Running to time-tables presupposes the limitation of buses to those on the time-table, otherwise pirates will skin the traffic in advance.

26. *Publication of schedules of fares.*—We have suggested that it should be possible for public authority to determine and prescribe the economic fare. Whether it would be practicable to prescribe any minimum we are in doubt. The only object of this would be to prevent cut-throat competition, but we do not think that this is the way; nor can we consider it likely that there would be much evidence forthcoming against an offender. We think, however, that schedules of fares should normally be prescribed on the more regularly travelled routes.

27. *Compulsory insurance.*§—Apparently no existing regulations prescribe insurance against third party claims or against fatal

* Madras, para. 31-B; Bombay, para. 30; United Provinces, para. 31; Punjab, paras. 39 and 41; Bihar and Orissa, para. 26, North-West Frontier Province, para. 18.

† United Provinces, para. 31; Punjab, para. 39.

‡ Madras, para. 29; Bombay, para. 30; United Provinces, para. 30 (3); Bihar and Orissa, para. 30; Central Provinces, para. 35.

§ Madras, para. 31-B; Bombay, para. 30; United Provinces, para. 27; Punjab, para. 40; Central Provinces, para. 37.

or other injury to passengers. In practice, however, a few concerns do insure, while the hire purchase companies require this until instalments are paid. In such cases vehicles and drivers are usually insured on comprehensive policies covering third party risks, but not claims in respect of passengers. The industry has now developed to a stage at which it has a responsibility to the public, and since, in the case of death or injury due to a driver's negligence, there is now often no civil redress except judgment against an insolvent, compulsory insurance against passenger risks should be considered. We are not in a position to state what would be the additional cost involved, but we understand that, in comparison with that of operating a bus, the addition would not be out of the question.

28. *Effect of above proposals.*—The fuller regulation and control which we have suggested would, by eliminating cut-throat competition, make it possible for the bus proprietor to offer a better service to the public and to conform to regulations to that end. They would, moreover, tend to throw open the business to enterprise of a more substantial character and thus facilitate a measure of road and rail co-ordination by producing a body of bus concerns with which railways could enter into agreements for the interchange of traffic, which normally is not now possible. It cannot be denied, however, that to the extent to which acute competition is responsible for rates of fare below the economic level, these measures would increase fares, though not, we believe, to an extent disproportionate with the additional efficiency and convenience of the service.

29. *Probable economic fare for a motor bus.*—We have in Chapter V, shown that the cost of operating a rural bus on the cheapest possible basis, with profits limited to bare subsistence of driver and cleaner, would appear to vary, where there is no provincial or local taxation, from 4·28 annas per mile to 5·06 annas per mile, depending on the total annual milage. For a large fleet, on the other hand, with light provincial and local taxes but considerable overhead for management and inspection, the cost is 6 annas 10 pies per mile. The price of petrol varies, and there may be some adjustments of taxation, but as a general rule in probable circumstances we think it unlikely that a regular and efficient service can be worked at less than about six annas per vehicle-mile. At this rate a 20-seater bus would require fares at 3·6 pies per passenger-mile, if it were to be run completely full for the whole of every journey throughout the year. But one of the principal advantages of rural buses lies in ability to pick up and set down passengers *en route*, and the fare must clearly be at such a level that the bus is not run at a loss whenever it is not loaded to capacity for the whole of every journey. As a general rule, we think that fares should be pitched on the assumption of an average load of 2/3rd capacity, or 14 passengers, in which case the economic fare would be about 5 pies per passenger mile. Such rates of fare, and higher, already

prevail on routes where keen competition is lacking. At such a rate, incidentally, competition with the railway would be only in the field of convenience, and, in any event, the rate appears to be the economic one.

30. *Steps to be taken for the direct protection of railways against further competition.*—In the foregoing paragraphs we have confined ourselves to the control of motor transport necessary in the interests of the public, and we believe that incidentally this would tend to reduce competition with railways, and encourage the opening up of new routes. But there is the possibility that, with a better load factor, some cutting of rates, and the improvement of vehicles and engines, the cost of operating motor buses may allow of fares comparable with those on railways, and that competition will continue and increase. It seems necessary to consider therefore to what extent, if any, and in what way, it may be desirable or possible by direct rule to prevent the extension of this competition to wider fields and in greater intensity, in which connection we must assume that the following propositions will be generally accepted:—

(1) That, in view of the immense amount of public capital invested in Indian railways and of the paramount necessity for cheap railway rates for the carriage of agricultural staples and heavy traffic, it is not ultimately in the interest of the community either that the railways should be damaged as a property by extensive competition, or that, in order to pay their way, they should be forced to raise their rates on other traffic.

(2) That competitive motor transport on parallel roads costs money for the maintenance and improvement of those roads.

(3) That at present, and for several years to come, areas that have neither roads nor railways are being deprived of good roads and motor transport for lack of money; so that to some extent parallel bus services where a railway already exists are depriving other areas of needful development.

We do not suggest that up to now the conditions hypothecated in our first proposition are actually threatened in India, but the competition which has already developed is sufficiently serious, and it seems to be necessary to consider how far, with returning prosperity, it is in the general interest that motor transport should be free to make further inroads into railway revenues to the extent of its capacity. We are convinced, and believe that this is the accepted view, that the motor vehicle provides a new and convenient form of transport which cannot be denied to a locality merely because there is already a railway. A reasonable hypothesis appears to be that where motor transport does and can afford to the public, over an existing road, a service which is in frequency

and convenience superior to anything which the railway can offer or hope to offer, it would be contrary to public policy to deprive the public of it. But that, where the advantage of motor transport over the railway is only slight, the community cannot at the present stage afford to pay for both. Briefly, both road and rail transport have their appropriate field, and it is proper that authority should as far as possible confine each to that field; but the duplication of services within a certain limited distance cannot be excluded from the field of motor transport.

31. "*Zoning**."—It has been suggested that, where the railway service is attenuated, a motor bus service is a public necessity but should not be allowed to run in direct competition with the railway, and that, therefore, no bus should be allowed to start, say, within, two hours before or after the departure of any train. We doubt, however, the efficacy of any such arrangement; if the public are to travel by a motor bus, then it would be difficult to justify and enforce any regulation which would compel them to do so at stated times only. Our view is rather that an attempt must be made to determine the distance up to which the motor bus offers such an outstanding advantage over the railway as to justify its existence. We are considering more or less directly parallel routes, because where the bus route is substantially the longer this will favour the railway, and where the converse is the case and the bus short circuits a railway, with probably a change at a junction involved in the railway journey, we doubt the practicability of any general rule. On parallel routes, then, the general opinion which we have gathered appears to be that the bus may be superior up to about fifty miles, and in suggesting that some system of "zoning" within some such range might be considered, we think that the figure should be regarded as extremely elastic. On the stated principle, that is that the motor service must be substantially the superior, the distance clearly depends upon the speed of the railway, it might, for instance, be greater in the case of a narrow gauge light railway than in that of a broad gauge main line, and we do not think that any hard and fast rule can be laid down.

The Indian Roads and Transport Development Association, while agreeing with us in principle that some system of zoning might be desirable, considered it to be impossible and unwise to lay down any specific distance, and while we agree that individual cases must be considered on their merits, we feel that unless we suggest some approximate figure the suggestion will have little practical meaning. The proposal thus is that the registering authority should prescribe the route over which, or the area within which, a bus may ply and should limit these in such a way that a bus cannot run in direct competition with a railway between points more than a certain distance apart, which on the average might be something of the order of fifty miles. In the case of a trunk road

* Madras, para. 31-C; Bombay para. 31; United Provinces, para. 30 (2); Punjab, para. 42; Bihar and Orissa, para. 15.

and railway running parallel with each other for greater distances, buses would be licensed from town A to town B, and others from town B to town C, and it would still be possible for individuals by changing buses *en route* to make a journey parallel with the railway for a very great distance, but we do not think that that is likely. Similar restrictions would, of course, apply to the case of goods lorries.

We cannot pretend however that such a policy would in itself result in any great reduction of competition, and to the extent to which it would merely perpetuate the existing practice it would be unobjectionable from the point of view of those desiring to travel by motor bus. We shall, however, in Chapter IV discuss the effect of a policy of zoning on railways.

32. *Need for accurate statistics regarding motor transport.*—We have throughout our enquiry found great difficulty in ascertaining facts regarding motor bus transport. At present, as a general rule, buses are registered and licensed to ply for hire, but no regular statistics of the number of licenses on various routes are readily available. Road authorities are concerned to study the wear and tear of roads in relation to the number of buses. Recently railway administrations have independently been carrying out investigations into the extent of bus competition; and it would have been of very great benefit to us had we been able to ascertain with some accuracy the relative number of buses running in competition with railways and otherwise. It appears that motor transport has so developed in importance that from many points of view the ready provision of accurate statistics concerning it is necessary. The question of taxation, the yield of taxes from different roads and the expenditure on roads in relation to the earnings from such taxes, are all questions which will in future need the careful compilation of statistics, and we consider that this is a matter which might now receive attention.

33. *Traffic control authority.*—It is evident that, if anything on the lines we suggest is to be attempted, very considerable additional duties will devolve upon the traffic authority. That authority will be called upon:—

(*a*) To determine the number of public service vehicles or lorries to be licensed for any route or routes or areas.

(*b*) To determine in what cases time tables are desirable and to arrange a roster so that all buses, if in the hands of different owners, have a regular turn at the more profitable times.

(*c*) To prescribe the maximum fare and to approve schedules of fares between different places where these are considered to be desirable.

(*d*) To determine the conditions subject to which monopolies may be granted and to grant monopolies under control, possibly for limited periods, in order to encourage private enterprise to open up new routes.

(*e*) To prescribe the zones within which motor buses may be licensed to ply in competition with the railways.

(*f*) In co-operation with road authorities, to make periodic counts and keep records of the traffic on various routes, and

(*g*) generally to direct the control of motor vehicles and, a point to which we attach considerable importance at a time when the industry is growing and conditions are changing, to advise Government from time to time regarding necessary changes in rules or regulations.

With such functions, the controlling authority would need to be in close touch with the general conditions of transport in his area, with responsible public opinion, with the motor transport industry, with the road authority both provincial and local, and with local railway officers. It would also be appropriate that an authority so closely in touch with the whole business should control licensing, registration and the collection of taxes, and be generally in a position to direct the administration of the rules and such matters as the management of local bus stands, and so forth. Quite possibly Superintendents of Police would be unable to discharge these extensive functions in addition to their existing duties, but in any event we believe that a civil district is too small a geographical unit, having regard to the normal range of motor transport. The authority in one district may accept a driving license and vehicle-certificate granted in another, but there will still be the difficulty that the documents of one district will have to be extended to the other by endorsement; and, in the limitation of the numbers of buses on a route lying in two districts, that of arranging between two authorities what is the appropriate number and what number is to be apportioned to each. We believe therefore that the area for these purposes should be that of a Commissioner's Division, with some arrangements for co-ordination between divisions. We do not consider that, at the present stage and with regard to economy, it would be necessary to set up a separate whole-time authority such as that of Traffic Commissioners in the United Kingdom, and the general opinion upon this point is that traffic control could be efficiently directed with the advice of an advisory committee upon which the interests above referred to would be represented*. For the general co-ordination of development of communications within a province, we find there is a considerable body of opinion in favour of the creation or revival of boards of communications, and such bodies would be able to advise on general policy and on the co-ordination of control in Commissioners' divisions. The actual inspection of vehicles, the examination of drivers, and the issue of licenses and permits would remain in the hands of the police. To what extent extra establishment would be necessary we are unable to say, but we consider that some arrangement on the lines we propose would be an economical means of securing co-ordinated con-

* Bengal, para. 26; United Provinces, para. 27; Punjab, para. 43.

trol with the approval of the various authorities concerned and the support of public opinion. In the event of a difference of opinion in a divisional committee, the matter could be referred to the provincial Government which would presumably take the advice of the provincial board of communications, and we propose later that, in the event of a difference of opinion on that body between the railway representative and the local Government, it might be possible to arrange for the case to be taken to arbitration.

CHAPTER IV.—FUTURE POLICY OF RAILWAYS IN REGARD TO MOTOR COMPETITION.

34. *Possible development of motor competition.*—We have shown in Chapter II that competition has not up to the present developed to any very great extent and we believe that to the extent which it has developed there have been temporary and avoidable causes impelling small owners of unorganised and uncontrolled buses to herd together on the busy routes in competition with railways, and that not a little of that competition is really uneconomic and unstable. Nevertheless there is a possibility that, with better organisation, more convenient road services will be available to the public and as this process develops we think there is danger of competition intensifying.

35. *Attitude of railways towards future competition.*—With the prospect of road motor competition increasing, what should be the future policy of railways? It seems to us that there are three possible courses open:—

(1) Inaction, if the zoning of motor transport is generally practised;

(2) a continuance of what may be described as "counter competition"; or

(3) the operation of road motor transport by railways themselves.

We propose to discuss each of these in turn.

(1) Inaction in view of the Adoption of Zoning.

36. *Zoning of road motor transport.*—We have during our tour (*vide* paragraph 31) received a good deal of opinion in favour of the principle of zoning road motor transport *on roads running parallel with railways*, on the underlying hypothesis that the railway is better suited to long distance traffic and the motor bus to short distance; and that it would be proper to confine each to its appropriate sphere.

37. *Zoning as it affects railways.*—Though this device may have much to support it as a compromise, we think it is only fair to state the railway point of view in regard to it. Road motor transport at present chiefly affects the short distance lower class passengers, and zoning therefore will not substantially bring any relief. The short distance lower class passenger contributes largely to the total passenger earnings of almost all railways in India. This point was brought into strong relief by the written statement furnished by the Agent of the East Indian Railway to the Jayakar Committee.* the Agent pointed out that motor buses were competing for intermediate and third class traffic which formed 99 per cent. of the East

* Indian Road Development Committee: Evidence Volume 1, pages 326-329.

Indian passenger traffic and 93 per cent. of its passenger earnings. Again, the range of the motor bus is about 50 miles which was the range of 80 per cent. of the East Indian Railway intermediate and third class traffic. Further, about three quarters of the above mentioned 80 per cent. of passengers travel within a range of 20 miles. In view of these considerations, he claimed that railways, as public property, should be protected, that the duplication of transport facilities was wasteful, that motor buses should provide feeder and auxiliary services, and that, if competition was considered necessary, it should be strictly regulated.

That the transfer of short distance third class passenger traffic to road motor transport must seriously affect the railway passenger earnings can best be seen from the following table where we give for the official year 1930-31 the total third class passenger earnings of every first class railway, the earnings from third class passengers travelling within a zone of 1 to 50 miles (excluding season ticket holders) and the percentage of the latter to the former:—

Railway.	Total 3rd class earnings.	3rd class earnings 1-50 miles zone.	Percentage col. 3 of col. 2.
1	2	3	—
	Rupees.	Rupees.	
Assam-Bengal	56,95,867	27,28,061	47·89
Bengal-Nagpur	1,39,59,000	46,00,000	32·96
Bengal and North-Western	1,24,44,000	61,94,000	49·77
Bombay, Baroda and Central India	3,25,17,000	1,36,56,000	42
Burma	85,00,000	39,00,000	46
Eastern Bengal	1,48,45,000	56,80,000	38·26
East Indian	4,22,00,000	1,22,50,000	29
Great Indian Peninsula	2,77,49,000	77,40,000	28
Jodhpur	29,48,000	9,32,000	31·62
Madras and Southern Mahratta	2,13,72,000	90,97,000	42·56
North-Western	4,10,20,000	1,36,70,000	33·3
Rohilkund and Kumaon	20,00,000	11,86,000	59·3
South Indian	2,33,52,000	1,20,86,000	51·76
Total and average	24,86,01,867	9,37,19,061	37·69

In view of these figures it can hardly be expected that railways will regard with complacency competition affecting so large a proportion of their passenger earnings, but continued losses in this zone would seem inevitable if nothing beyond " zoning " of motor transport can be done to protect railways.

38. *Effect of zoning on the light railways.*—If zoning cannot be accepted with equanimity by the larger railways, it will be no solution of the problem now confronting the light railways. The latter are usually short branch lines, many of which are parallel to roads and if public service motor transport runs on these parallel roads

restricted only as to range, the loss of passenger traffic by the light railways is likely to increase substantially as time goes on. The position of the light railways has been recognized by the Council of the Indian Roads and Transport Development Association which in its recommendations to us remarks as follows:—

> "Compensation on the lines of a monopoly over the road being granted to the (light) railway for a certain number of years might be considered on the understanding that the railway service is discontinued and substituted by a modern service of motor transport." (Appendix D.)

39. *Opinions on zoning held by motor transport and other interests.*—We must record also that we have, during our tour, discovered a certain weight of other opinion against the principle of zoning, advanced principally by motor transport interests. At a meeting convened for us in the Madras Presidency the Manager of one road transport organization running competitive services with the railway expressed the strongest objections to the principle, which, he declared, would seriously affect the earnings of his company. Again, in Bombay we found that there was a good deal of official opinion also against it. And the Indian Roads and Transport Development Association, while agreeing that zoning might be considered as a compromise, were not in favour of specifying any limit. In view of these opinions and the considerations outlined above, it is clear that while zoning may prevent competition increasing in range, its introduction may give rise to controversy and would not substantially affect the present position which must remain a serious problem.

(2) "Counter Competition."

40. *The laissez-faire policy.*—We have found a volume of opinion in favour of allowing unrestricted motor competition to develop unchecked. Generally these opinions were based on the alleged unsatisfactory service often provided by railways. It was argued that healthy competition would stimulate railways to meet the needs of the public better than, it is stated, they are doing; that railways have hitherto been disposed to take advantage of their monopoly and ignore public needs; and that already such motor competition as there is has to some extent made railway administrations more reasonable.

We cannot of course pronounce judgment on these opinions, but we feel it our duty to point out that unrestricted road competition with railways is bound to reduce railway earnings, and that no railway manager will be consent to see his passenger earnings decreased by it without making great efforts to keep the traffic he has got and to regain, if he can, what he has lost. He would, in fact, be failing in his duty as a railway manager if he did not do so.

41. *Railway measures to meet competition.*—So far railways have adopted or are contemplating the following steps to meet road motor competition:—

(*a*) Cheaper tickets and cheap return tickets.

(*b*) Running of more trains.

(*c*) Speeding up of trains.

(*d*) Experiments with self-propelled units.

(*a*) *Cheaper tickets and cheap return tickets.*—The issue of cheaper tickets and cheap return tickets has been adopted to a considerable extent on some of the larger railways and has met with varying success.* The Great Indian Peninsula Railway report that cheap tickets have been issued over several sections affected by motor competition while in a certain number of cases these facilities have again been withdrawn as not proving justifiable.

In some instances the introduction of cheaper tickets has, it is true, increased the number of passengers travelling, but it has sometimes also involved running of extra trains which increases costs of operation. Cases of this kind were reported† by the Bombay, Baroda and Central India Railway in connection with certain of the light railways they operate in Gujerat.

In their letter to the Chief Commissioner of Railways‡ Messrs. Killick Nixon, on behalf of the light railways, claimed that the larger lines operating these have not generally given sufficient attention to the question of cheaper fares. Whether this is the case or not, we are of course not in a position to decide; but Mr. Anderson, the Railway Manager of Messrs. Martin & Co., gave us particulars which show that his company at any rate had not reduced fares on the light railways they operate themselves; but he particularly called our attention to the decrease in earnings per train-mile on the Baraset-Basirhat Light Railway due to the running of extra trains put on in an effort to meet motor competition.¶

The cost of operating extra trains to carry the additional passengers attracted by cheaper fares may be so considerable as not to be justified; and this point, we think, requires careful investigation. It must also be admitted that cheap tickets, though an important consideration, are not *always* the ruling consideration with the public. Although the Bengal and North-Western Railway claim§ that their comparative immunity from motor bus competition is chiefly due to the lower scales of fares in force on that railway, we have been given a good many instances where bus fares on competitive routes are actually higher than the railway fares and where, even so, the public pay them because presumably the buses provide superior facilities.‖

(*b*) *Running of more trains.*—The menace of competitive motor buses has certainly induced railway administrations to study the

* Madras, para. 23; Bombay, para. 15; United Provinces, para. 18; Punjab, para. 26; Central Provinces paras. 17 (*c*) and 23.

† Bombay, para. 20.

‡ Bombay and Bengal, Appendices 2.

¶ Bengal, para. 28.

§ United Provinces, para. 20.

‖ Madras, para. 29. Bengal, para. 13. Central Provinces, para. 28.

needs of their local passengers more, and we have been informed by practically all the railways we have consulted that, to regain the traffic, motor bus competition is being watched and, between those points where it is intense, trains have been put on at the hours at which most people wish to travel. The Great Indian Peninsula Railway have a certain amount of staff whose principal duty is to watch competitive bus services and to report whether the running of extra trains is likely to recover passengers to the railway.*

(*c*) *Speeding up of trains.*—Railway administrations are also giving attention to the speeding up of trains, especially on branch lines. Unfortunately some of these are not built to a standard permitting fast running, and perhaps an outstanding case of this kind is furnished by the Bezwada-Masulipatam Railway, some particulars of which are given in our report on Madras. This metre gauge line, 50 miles in length, is suffering intensely from road motor competition; but it is estimated† that to adapt it to fast running would involve a total expenditure of nearly Rs. 6 lakhs, the present speed restriction being due to low formation, insufficient ballast and inadequate signalling.

The latter is an important consideration on many branch lines because trains are at present restricted to a speed of 10 miles an hour when entering crossing stations not provided with a certain minimum equipment of signalling and point locking, and we were informed‡ by the Agent of the Dibrugarh-Sadiya Railway that this had such an effect on the overall timings of his trains, that he was contemplating the installation at his crossing stations of some form of improved signalling and point locking. But the inability of some branch lines to carry fast trains is of course particularly marked on the light railways. In the general letter addressed by Messrs. Killick Nixon & Co., to the Chief Commissioner of Railways, the speeding up of trains on the light railways was one of the points made; but the difficulties in the way of this nearly all arise from the inexpensive construction of the light railways.

The Bombay, Baroda and Central India Railway informed§ us that, in reply to this point in Messrs. Killick Nixon's letter, they have told the firm that so far as the Gujerat Light Railways are concerned, increased speed would involve expensive alterations such as replacement of the present light section rail, and that even if these were carried out, the decrease in the overall time of trains would not be appreciable. Light section rail was also reported¶ as being one of the difficulties in the way of an increase of speed on the Sind Light Railways of which the Managing Agents are Messrs. Forbes Forbes Campbell & Co., of Karachi.

The Great Indian Peninsula Railway in reply to this point raised by Messrs. Killick Nixon informed the firm that, so far as the Cen-

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* Central Provinces, para. 17 (*b*).
† Madras, para. 15.
‡ Assam, para. 10.
§ Bombay, para. 25A.
¶ Sind, para. 11.

tral Provinces Light Railways were concerned, the existing engines on the light railways could not provide increased speed.

Many single line branches are also restricted in their capacity by infrequent crossing stations, and, in certain circumstances, it might be necessary to provide extra crossing facilities to allow of extra trains.

Ballasting, relaying of rails, improvement of signalling and point locking, increased power, and additional crossing stations, all represent considerable outlay and it is very doubtful whether, even were such work undertaken, a single line railway, especially a light railway, would be in a position to give a service as adequate and convenient as the competitive buses.

(*d*) *Self-propelled units.*—Some railways are experimenting with self-propelled units, and we have been informed by most of those which have tried steam coaches that they have not been satisfactory, owing to:—

(*i*) mechanical defects;

(*ii*) inability to cope with rushes of traffic; and

(*iii*) inadequate return on the capital outlay because of the comparatively small carrying capacity and of cheap 3rd class fares.*

As regards light railways in the Central Provinces, we were informed by the Great Indian Peninsula Railway that they were in correspondence with their Consulting Engineers regarding some self-propelled unit which, having a light axle load, would be capable of running at high speeds and have a seating capacity of 25 to 50 passengers.

From all we have been able to gather during our tour it would seem that self-propelled rail units† are still very much in the experimental stage, and that a really satisfactory vehicle has still to be designed, but even if a satisfactory vehicle were forthcoming, it is questionable whether it could provide as convenient a service as a line of buses.

In our report on the Central Provinces, we have emphasised the effect of motor competition on the Light railways in particular, and we have shown why we think that attempts to run what may be described as a "bus service" over these railways cannot prove successful. A single line of railway can handle economically large numbers of passengers if they are concentrated in a train with a considerable seating capacity, but it is very doubtful whether a light railway could run, as a paying proposition, a self-propelled unit with little more than bus capacity. And it should be obvious that the self-propelled unit cannot operate as frequently and freely over a single line of railway as can a line of buses on a road.

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* Central Provinces, para. 17 (*e*).

† Anything in the nature of a "Ro-railer" would, we think, be impracticable at present in India owing to the generally light construction of roads.

42. *Counter competition from public funds.*—Such, in general, are the efforts railways are making to meet competition. But what impresses us is that such efforts cost money and, as money spent on railways in India is public money, it is the expenditure of public money that is concerned. We think that there is considerable doubt whether such expenditure in the long run can generally effect its object, and the question therefore arises whether it should continue.

In passing we may mention a point of view which was placed before us at one of the district meetings* which took place in Madras. One of the district board officials attending the meeting asked us to what extent Government ought to permit railways with their very great resources to compete with motor buses; and whether it was in the public interest, to allow railways to continue spending money on what we call " counter competition ". The popular point of view doubtless is that railways have infinite resources; and although this may be erroneous, the question is still pertinent whether the best policy is to continue public expenditure on what may be futile efforts to meet motor competition.

There is another minor consideration. Although we have pointed out in our reports that the present watch kept *by railways* over competitive motor buses is generally insufficient to provide accurate information; none the less it involves extra staff, and expenditure. If the policy of counter competition is to be continued, railways must, in their own interests, develop still further their intelligence staff. This development has occurred to some extent on the Great Indian Peninsula Railway and that example will doubtless be followed by other lines.

(3) Operation of Road Motor Transport by Railways Themselves.

43. *Opinion in regard to railways operating road motor transport.*—Generally official and unofficial opinion appears to be opposed to railways operating road transport, chiefly lest a monopoly should result which would lead to the public being badly served, and also because of objection in principle to public invasion of fields of enterprise. We found, however, that while this was the usual opinion, there were exceptions; for instance, the Deputy Commissioner and the District Council of the Amraoti District† were strongly in favour of the Great Indian Peninsula Railway operating road motor transport between certain points. In Madras‡ again we were definitely asked at one of the district meetings why railways themselves did not take to the road. At a meeting convened in Belgaum we found that the Collector of Dharwar and the Superintending Engineer of the Circle were in favour of railways doing so. The Chief Engineer and Secretary to Government of

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* Madras, paras. 29-A and 31-C.

† Central Provinces, para. 30.

‡ Madras, para. 29-A.

Bombay, Public Works Department suggested* it as an alternative to a branch line in the Nira Canal area; and at a meeting convened by the Commissioner at Poona, although it was considered objectionable that railways should be given a monopoly if they operated road motor transport, it was agreed that the evil of such a monopoly could be mitigated under adequate control.

The Managing Agents of certain light railways† are definitely in favour of the railways operating road motor transport; in fact Messrs. Gillanders and Arbuthnot who operate the Darjeeling Railway and Messrs. MacLeod who operate the Kalighat Falta Railway in Bengal have been pressing for powers to do so for many years past. Few of the larger railways have so far asked for such powers, but the Assam Bengal Administration informed us that they were in favour of this course,‡ and we understand that the Bengal Nagpur Railway are considering it.

44. *Present legal restrictions and their effects.* (a) *State Managed Railways.*—Before we discuss further the question of railways operating road motor transport, we may refer briefly to the legal position. We understand that at present there is nothing in the Railway Act to debar State managed railways from this, although they would have to obtain the sanction of the Governor General in Council, and would, in common with all other owners of road motor vehicles, be subject to provincial regulations.

(b) *Company managed railways.*—In the case of Company managed lines and domiciled companies, the position is different. Company managed lines are governed by clause 4 (*c*) of Statute 42 and 43 Victoria, Chapter 41, which reads as follows:—

> "A guaranteed company may, from time to time, with the sanction of the Secretary of State for India in Council, exercise all or any of the following powers:—
>
> (*a*) * * *
>
> (*b*) * * *
>
> (*c*) They may provide any means of transport which may be required for the reasonable convenience of persons or goods *carried or to be carried on their railway* but not between any places between which any company shall, for the time being, be carrying on the business of carriers by water:
>
> Provided always that the capital outlay on the works mentioned in the three preceding sub-sections shall not in the case of any guaranteed company exceed in all 10 lacs of rupees."

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* Bombay, para. 27.

† Bengal, paras. 26 to 28.

‡ Assam. para. 12.

(c) *Domiciled Railway Companies.*—Domiciled companies are governed by section 51 (*e*) of the Railway Act (IX of 1890) which reads as follows:—

"Any railway company, not being a company for which the Statute 42 and 43 Victoria, Chapter 41, provides, may from time to time exercise, with the sanction of the Governor General in Council, all or any of the following powers:—

(*a*) * * *

(*b*) * * *

(*c*) * * *

(*d*) * * *

(*e*) It may provide and maintain any means of transport which may be required for reasonable convenience of passengers, animals or goods, *carried or to be carried on its railway.*"

45. *Effect of Statutory provisions.*—It will be seen from the words "in italics" that, in the case both of company worked lines and of domiciled railway companies, the operation of road motor transport is limited to the carriage of passengers and goods which are carried for part of the journey by the railway. The Railway Companies cannot, under the present law, run motor bus services on parallel roads and pick up and set down passengers at any point *en-route.* This facility, however, is just what many of the light railways require to meet motor competition, and they point out, with some reason, that, whereas railways are not allowed to invade each other's territory, there is nothing to prevent road motor services invading the territory of the railways; and the railways themselves, debarred as they are by legal restrictions, cannot respond.*

46. *Amending legislation.*—A bill to amend section 51 (*e*) of Railway Act has, we believe, been introduced in the Legislative Assembly and is now in circulation. If the amended bill is enacted, a similar amendment by Parliament would presumably follow to the relevant section of the Statute 42 and 43 Victoria, Chapter 41, which applies to Companies who manage certain railways under agreements with the Secretary of State.

It should be noted that in December 1930, the Associated Chambers of Commerce passed a resolution to the effect that any legal obstacles at present restricting the activities of railways on the road should be eliminated, and in speaking on this resolution Sir George Rainy stated that he considered it important that any technical legal difficulties in the way of railways running road motor services should be removed.

47. *Objections to railways operating road motor services.*—There will, of course, be many objections raised to railways operating road motor services, and, before stating the arguments in favour of railways doing so, we will discuss these objections. If

* Bengal, para. 28.

railways are permitted to operate road motor services it will, we feel, be necessary, as we show later, for such services to be protected, and they will therefore be criticized as monopolistic. It is clear, too, that railways could not run road motor services at the uneconomic rates that are now frequently charged by the improvident owner. Finally, criticism may be expected on the grounds that railways are interfering with private enterprise.

48. *Need for protecting road services operated by railways.*—It must be admitted that if railways are allowed to operate road motor services they would require to be protected. Under present conditions it would be impossible for railways to compete with many of the buses now running on parallel roads. Railways would be expected to provide a good standard of vehicle, subject to strict periodical inspection;* the staff working the vehicles would be railway staff working under railway conditions; and the services would be regulated as regards time, speed and the fares charged. Adequate protection of the railway bus services would, therefore, involve a monopoly; otherwise if a railway operated buses on a route and developed traffic on it, a number of owner bus drivers might obtain permits on the same road and indulge in a rate cutting war which, while it might temporarily benefit the public, would not ultimately be to their interests.†

Monopolies are admittedly objectionable, but we think the objections are often over-stated, and there are always methods of controlling them so as to prevent victimization of the public. We have found for instance, in certain provinces, that controlled transport monopolies already exist‡; bus proprietors being given monopolies over certain routes either on condition that they maintain the roads in a reasonable state of repair, or on the payment of an annual sum which is applied to the repair of the roads. We think, therefore, that even if railway administrations were given certain monopolies of public motor transport there would be many ways in which they could be adequately controlled, more in fact than in the case of private monopolistic enterprise. Moreover, if, as has been suggested (*vide* paragraph 33 above) local Traffic Boards are established to deal with road traffic, we think that such boards could in such cases safely be entrusted with the duty of watching over the interests of the public.

49. *Raising of fares.*—Another difficulty which will certainly have to be faced, if railways are to be allowed to operate road motor services, is that on many motor bus routes the fares now charged, either in competition with the railway or in competition

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* Bombay, para. 26.

† The Calcutta and Madras Tramways Companies were compelled to withdraw their motor bus services due to this, and another company, we believe, is contemplating the same step but has, we understand, postponed a decision until the local Government concerned deal with certain recommendations of a recent Committee.

‡ United Provinces, para. 31, Punjab, para. 39.

with other buses, are often uneconomic, and the railway administration could of course only charge an economic rate. The general public, who have hitherto been paying uneconomic fares, would almost certainly connect the raising of fares with the operation of buses by the railway. As against this, it may be argued with some force, we think, that the end of uneconomic competition between buses themselves and buses and railways can only be a question of time. Gradually the general level of competitive fares must be raised whatever agency operates road motor services.

Other evidence which makes us think that when motor transport is better organised fares will rise to an economic level, was given us by the Manager of one of the largest road motor transport companies with which we came in contact during the course of our tour. This company originally charged two pies per passenger per mile in competition with the railway, but it was quickly found that this was an uneconomic fare and the rate has been raised to four or five pies per mile; and on one service run by this company in direct competition with the railway a charge of 6 pies a mile is made, and the service is still largely patronised by the public owing to its convenience.

In our reports on Madras, Bengal and the Central Provinces cases have been quoted where the fares on buses running in competition with the railway are in excess of the railway charge, but where the buses still apparently command the patronage of the public.*

50. *Interference with private enterprise.*—A third point which emerges from the proposal to allow railways to operate motor services, is the interference involved in private enterprise in motor transport. India is of course already committed in the State Railway system to one form of State monopoly and an objection in principle to some extension of the policy to another would not perhaps be wholly consistent. It is moreover clearly a matter for consideration whether State Railways ought or ought not to be protected from private enterprise when it impinges upon them. A further point is that private enterprise, represented as it is at present chiefly by the small bus proprietor or owner-driver, has not generally, to judge from the bulk of opinion we have received, given the public as satisfactory a service as it might; even competition between buses themselves has not improved the services; it has not for instance prevented overcrowding. Moreover, even if railways are allowed to operate motor services on parallel roads, there would remain very great scope for private enterprise elsewhere; and it is to be hoped that in any event motor transport will be induced to penetrate outlying areas where facilities do not at present exist, which is its more appropriate field.

51. *Difficulties from the railway point of view.*—The larger railway administrations have generally been averse from engaging in road motor transport because they anticipated certain other

* Madras, para. 29; Bengal, para. 13; Central Provinces, para. 28.

difficulties, apart from the impossibility of competing on equal terms with the owner-driven bus now common. These difficulties can be summed up as follows:—

(*i*) Considerable capital outlay would be necessary on vehicles, workshops and garages;

(*ii*) the organisation of an extra department would be necessary;

(*iii*) it would be difficult to secure to the railway the revenues earned from motor buses; and

(*iv*) it would be difficult to ensure control over expenditure of consumable stores.

As regards (*i*), Capital expenditure, we have suggested that a considerable amount of money is already being spent in counter competition. The reduction of fares; the running of more trains; the improvement of track, signalling, etc.; the purchase of self-propelled units; all these, especially the latter, cost considerable sums of money which would probably go a long way towards purchasing a fleet of buses and establishing bus routes. In particular it may be urged that the investment of money in a self-propelled experimental unit would seem to be open to question when at the same cost a number of buses of proved reliability could be purchased. To emphasise this point, we might add that the total cost involved in bringing up to standard, say the 50 mile metre gauge branch line on the Madras and Southern Mahratta Railway alluded to above in para. 41 (*c*), exceeds by about one lakh of rupees the capital outlay incurred by His Exalted Highness the Nizam's Railway in instituting a successful bus system with a fleet of 27 buses.

(*ii*) As regards the organisation of an extra department we suggest that railways are already spending a certain amount of money on staff who are occupied in observing and reporting on competitive bus services, and as bus competition increases (as we fear it may), the number of such specialized staff will tend to increase. Would it therefore not seem more reasonable to employ such staff in organising a road motor service instead of watching competitive buses?

(*iii*) As regards the difficulty of leakage of takings, we agree that the danger is considerable and we have been at pains to ascertain how it is surmounted by such organised motor transport companies as we have met with during our tour. We find that it is believed to be largely prevented by the establishment of proper booking offices where bus tickets can be obtained at the start of the journey. The managers of the two bus companies we consulted on this subject informed us that the issue of tickets at these offices had practically eliminated leakage and one of them said that he had been able to dispense with bus conductors in consequence. During our tour in one province (Madras),* we visited the bus stands of one of the companies and from what we saw there, we

* Madras, para. 29.

think that the system of issuing tickets at an office at the start of the journey must be largely successful in eliminating loss of revenue. The manager of the company informed us that it might be possible for some leakage to occur owing to passengers being picked up for short distances *en route*, but that he had Travelling Inspectors whose duty it was to check this.

It would seem therefore that if railways desire to operate road motor transport and open offices for the purpose of issuing bus tickets in towns and at important stops *en route* much of the difficulty involved in preventing leakage would be overcome. A further argument in support of this was furnished to us by the Bombay, Baroda and Central India Railway. This railway opened a certain number of halts on the Tapti Valley Railway to meet road motor competition, and at the outset placed no staff in charge of these; the result was not satisfactory, and accordingly a booking clerk was placed at each halt with the result that the takings increased by from fifty to sixty per cent.* We also think that other advantages would arise from the provision of booking offices in towns for the issue of railway bus tickets, as railway tickets could also be issued at these offices, and the resulting opportunity for publicity could not fail to be of benefit.

(*iv*) The possible leakage of consumable stores can only be met by proper organisation; but we think that it should only be a matter of time in building this up, and that it should be possible to provide against loss by proper accounting.

52. *Certain further advantages arising from railways operating road transport.*—If, then, these difficulties could be overcome, we think that other advantages might ensue from railways operating on the road. For instance, if the passengers now carried on certain branch lines suffering from motor competition could be transferred to the road, the cost of working such branch lines could certainly be reduced; if a branch line were kept open only for goods traffic, savings could be made both in maintenance and staff; and as regards the latter, doubtless some of them could be transferred to road motor services.

We think this latter point is of importance. Increase in motor competition may ultimately lead to the closing of branch lines, throwing railway employees out of employment; but if it is found possible for railways to organise road motor transport, some of the staff could be absorbed.

53. *Conclusion.*—Our enquiry has been concerned with the interests of railways in so far as those interests coincide with public interest; and we would emphasise here that, in stating the arguments in favour of railways operating road motor services, we believe that in general the ultimate public interest should, as a result, be better served. It is clearly not in the public interest either that railway earnings should seriously decline owing to motor

* Bombay, para. 20.

competition, or that the public should be deprived of motor bus services which can, in many cases, we think, meet the public needs better than can a railway. It is also questionable whether any public benefit will result from railways continuing a campaign of counter competition which must involve possibly unfruitful expenditure of public money, and we would again refer to the case of the Bezwada Masulipatam branch line cited in para. 41 (*c*) above. In that case an expenditure of Rs. $5\frac{3}{4}$ lakhs would appear to be necessary to enable the railway to *attempt* to recover traffic from 25 competitive buses, the capital value of which probably does not exceed Rs. 1 lakh. This instance we think, must be typical of many; it emphasizes the important financial implications of counter competition.

CHAPTER V.—THE TAXATION OF MOTOR TRANSPORT, AND OBLIGATIONS PECULIAR TO RAILWAYS.

54. *Criticisms of existing taxation of Road Transport.*—In paragraph 23 of the memorandum presented to us by the Indian Roads and Transport Development Association, which we reproduce at Appendix D, the present system and the extent of taxation of motor transport in India is stated to be unjust, and, be this as it may, the question is one which is attracting considerable attention and is inevitably bound up with the whole question of road maintenance and future development. We are impelled therefore to examine it as fully as the available information permits, to compare it with certain obligations peculiar to railways, and to suggest certain principles of taxation that appear to be gaining acceptance elsewhere.

55. *Difficulties of estimating total sum of taxes contributed by motor transport.*—Various estimates have recently been advanced of the total contributions by motor transport in India in central, provincial, and local taxes, and through miscellaneous tolls and imposts. An absolute *determination* of this sum would require an examination of the accounts of all taxing authorities and an analysis in the case of toll receipts into those from motor and other transport, all of which would at present be an impossible task. An accurate *estimate* would require information in greater detail than is available, including not only complete schedules of provincial and local taxes, but also the number of vehicles subject to each element of each schedule; and this also is impossible because quarterly or annual re-registration of vehicles is not general and, where it applies, the resulting statistics do not adequately distinguish between vehicles of different classes, sizes and weights.

56. *Provincial and local taxes.*—But it still appears to us to be desirable to attempt some calculation, however crude, of the nature of the total sum involved. At Appendices F and G we give details of the various fees and taxes imposed on private and commercial motor vehicles respectively in eight provinces. We have not ourselves had the time necessary to compile these statements or to check them in detail, but we put forward those presented to us by the Indian Roads and Transport Development Association, which we believe to be substantially correct.

(*a*) *Private cars.*—Taking, for private cars, as typical, a four-seater weighing between 15 and 30 cwt. unladen, the total of the taxes in various provinces appears to be as follows:—

——	Registration renewal.	Provincial tax.	Municipal tax.	Tolls.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Madras . . .	...	100	...	...	100
Bombay . . .	32	...	50 (average).	100	182
Bengal . . .	...	50	...	...	50

	Registration renewal.	Provincial tax.	Municipal tax.	Tolls.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
United Provinces .	...	...	40	...	40
Punjab . . .	...	80	36	...	116
Bihar and Orissa .	...	50	...	...	50
Central Provinces .	...	25	15	...	40
Assam . . .	...	...	30	...	30

and as an average we assume a figure of Rs. 75.

(*b*) *Commercial vehicles and cycles.*—In the case of motor buses and lorries the taxes appear to be:—

	Registration renewal.	Provincial tax.	Local tax.	Tolls and Misc.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Madras . . .	8	500	1,000	66	1,574
Bombay . . .	32	...	60	340	432
Bengal . . .	8	111	...	...	119
United Provinces .	30	600*	...	...	630
Punjab . . .	25	50	36	25	136
Bihar and Orissa .	...	342	...	20	362
Central Provinces .	...	160	30	12	202

Assam is excluded as monopoly fees complicate the question and the average of the above might be taken as Rs. 550.† Provincial and local taxes on motor cycles may be assumed at Rs. 25 per annum, and in absence of other information we apply these rates to the rest of India also.

57. *Estimate of total number of vehicles and contribution in taxes.*—In the absence of accurate statistics based on periodic re-registration, a possible way of estimating the total number of motor vehicles at present in use in India is to take the imports for a number of years and assume a rate of amortisation. In Appendix H we give such an estimate, corrected for the probable recent extension, beyond the normal, of the life of vehicles, owing to depression and disinclination to replace obsolescent vehicles, and we arrive at a figure of 70,000 cars and "taxis", 45,000 buses and lorries, and 7,500 motor cycles. This we have endeavoured to check on the basis of the known consumption of petrol during the year 1931 and we think it may be accepted as a reasonable

* A provincial tax of Rs. 600 per motor bus is proposed in place of local tax at present amounting to Rs. 100. (*Vide* United Provinces, para. 27).

† At Appendix J it will be seen that the total taxes paid by 20,140 commercial vehicles in seven provinces are estimated to be Rs. 262·75 lakhs. The Central tax of Rs. 800 represents Rs. 151·12 lakhs. The balance of Rs. 111·63 lakhs spread over 20,140 vehicles would be Rs. 550 per vehicle and this does not include the provincial tax proposed in the United Provinces.

approximation for our purpose. The total taxes being paid by all motor transport therefore may be as follows:—

	Rs. lakhs.
The receipts from import duties on vehicles, tyres and accessories and the excise and import duty on petrol during 1931-32 may be placed, in round figures, at	530·35
Adding to this provincial, State and local taxes on the number of vehicles arrived at above, we get:—	
70,000 cars and "taxis" at Rs. 75 . . .	52·50
45,000 motor buses and lorries at Rs. 550 .	247·5
7,500 motor cycles at Rs. 25	1·88
Total .	832·23
Say Rs. .	830 lakhs.

Of this total of Rs. 830 lakhs about Rs. 100 lakhs represents the contribution to the Central Road Development Account through the special tax on petrol; Rs. 430 lakhs represents the contribution to Central Revenues; and the balance Rs. 300 lakhs the contribution to provincial (and State) and local revenues.

58. *Comparison of taxation and receipts and the road bill.*—We have no information regarding the road bill in Indian States, but in Appendix C we give a statement of the expenditure from revenue in recent years in eight Governors' provinces (excluding Burma and the North-West Frontier Province) and it will be seen that, while the average expenditure on original works or improvement for the last seven years has amounted to Rs. 167 lakhs, the maintenance bill has increased since 1923-24 by Rs. 90 lakhs. Now we must assume for the purpose of comparison that the number of vehicles of all classes, and hence the total contribution in taxes, bears the same ratio in these provinces to that in the whole of India and Burma as does the consumption of petrol; and in the year 1931 the consumption in these eight provinces was approximately 72 per cent. of the whole. Applying this percentage to the gross receipts of Rs. 830 lakhs, the amount which may roughly be said to accrue from the eight provinces is Rs. 600 lakhs. But this represents the whole contribution including that from transport largely confined to cities, while the road bill is extra-municipal, and it is necessary to consider what proportion of the former is due to urban transport. As far as we can ascertain about 50 per cent. of the total sale of petrol in these provinces occurs in large cities having a population of 100,000 and over. Both private and commercial vehicles drawing their petrol from these cities use extra-municipal roads to a considerable extent, although in certain of them there must be a large amount of motor traffic which never leaves municipal limits. Again, there is a large number of smaller towns within which there is some motor traffic on municipal roads only. It is a matter of impossibility to determine to what extent

on the whole motor transport uses municipal and extra-municipal roads respectively, but, having regard to all the circumstances of the case, we think we should be on the safe side in assuming about 60 per cent. of the consumption of petrol, and hence of the use of the roads, occurs outside municipal limits. Applying this percentage to the receipts of Rs. 600 lakhs in respect of taxes on transport in these provinces, we get a rough approximation of Rs. 360 lakhs as being the present annual contribution, in all forms of taxation, of motor transport using extra-municipal roads in the eight provinces, and upon these there has been an average expenditure in recent years of Rs. 167 lakhs on original works and an increase in the maintenance bill of Rs. 90 lakhs. But, again, we do not know to what extent the latter figure represents the additional cost of maintenance due to the advent of motor transport. Part must be due to an increase of the metalled milage at charge as a result of the construction during this period of roads used by all classes of traffic; but, on the other hand, there has in certain provinces been little or no increase in the actual outlay on maintenance, and there is unfortunately considerable evidence that in some of them roads have deteriorated. It may even be also that, within the total of maintenance budgets, there has been some increased expenditure on motor transport roads, at the expense of others; but, that possibility apart, it seems that, in certain cases at least, the recent provision has been inadequate and that substantially greater expenditure would be necessary if deterioration is to be arrested. Having regard to these various factors we are unable to believe that the figure of Rs. 90 lakhs can be taken as representing the " real " or necessary increase due to the presence of motor transport, but we hesitate to suggest how far it may depart from the true figure. Turning to the average expenditure on original works and improvements, quite a considerable part of this must represent, besides the provision of new roads and bridges, other more or less permanent improvements of a capital nature which should not necessarily be set wholly against the revenues of to-day; and that, of the part which can be so set, not all can reasonably be attributed to motor transport because there are other beneficiaries.

59. *Taxation of and contribution by commercial transport in different provinces.*—But it is possible also to examine the question on the basis of the unit taxation and number of *commercial vehicles only* on extra-municipal roads in certain provinces. As ing number of rural buses plying, but we are aware that as these ing number of rural buses plying, but we are aware that as these figures are not regularly compiled there may be considerable errors:—

Madras	4,170
Bombay, say	4,750*
Bengal	1,700
United Provinces	4,500

* There is some discrepancy in the figures supplied to us; we take this figure as a probable approximation.

Punjab	3,030
Bihar and Orissa	790
Central Provinces	1,200
Assam	600
North-West Frontier Province, say	1,200
Total	21,940
Say	22,000

and in Appendices I and J we estimate the contribution by these compared with the extra-municipal road bill.

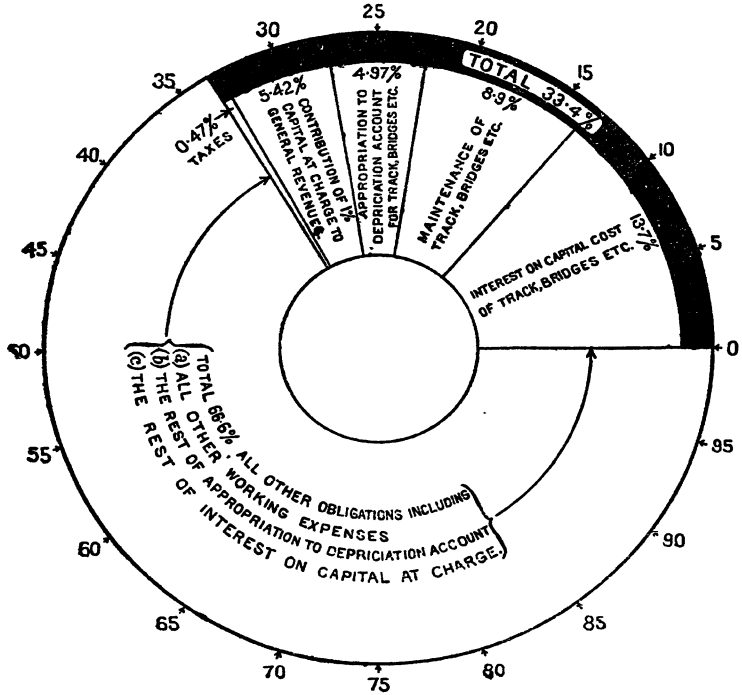
60. *Tax element in working expenses of motor transport.*—But we may first refer to the analyses in Appendix I in which we have tried to estimate the tax element in the working cost of bus services under various conditions. For a large fleet with considerable overhead charges for management and supervision, subject to relatively low provincial and local taxation,* the tax element appears to amount to about 16 per cent. of the working cost, or, in other words, if it costs 6 annas 10 pies per vehicle-mile about 13 pies of this is in taxes of all sorts. In the case of an inexpensive 30 cwt. bus run by a small owner or owner driver, taking only Rs. 65 per mensem in earnings or wages, and running only 15,000 miles per annum, the tax element varies from 17 per cent., where the cost of petrol is high and there is no provincial or local tax, to 21 per cent. in the Central Provinces, and 40 per cent. in Madras† where petrol is cheap but taxation in the aggregate is very high. As the yearly milage increases the tax element proportionately increases where the annual taxes are low and decreases where they are high. The tax element in these various cases‡ is illustrated on the diagram (facing this page), where also we show, on another diagram, the various obligations of railways as a whole which have to be met over and above the mere cost of operating on the track. We do not suggest that because the interest and maintenance on a railway road amounts to a certain proportion of the working expenses, interest and maintenance on the highway should cost, in the case of motor transport, any comparable amount; but the juxta-position of the two diagrams may be of interest as illus-

* The concern operates in a number of different administrations. We have not got particulars of the various taxes, but on the average they would not seem to be high.

† We put forward this figure of 40 per cent. in some doubt. In paragraph 31 and Appendix 4 of our detailed report on Madras we arrive at a figure of 30 per cent. The difference is partly explained by the exclusion in the latter figure of import duties, and by the fact that the latter was based on 24,000 miles per annum and the former on 15,000 miles. To the extent to which District Board license fees are based on actual rather than potential milage, the average fee of Rs. 1,000 for an actual milage of 15,000 per annum may be on the high side and the figure of 40 per cent. slightly overstated. But unemployment among buses is considerable and 15,000 miles per annum is not very wide of the mark we believe.

‡ The tax element in the case of the other Provinces shown on the diagram, has been similarly calculated.

ANALYSIS SHOWING OBLIGATIONS OF INDIAN RAILWAYS DURING 1930-31 ON ACCOUNT OF TRACK, CONTRIBUTION TO GENERAL REVENUES AND TAXES, AS COMPARED WITH THE TOTAL OBLIGATIONS FOR THE SAME YEAR.

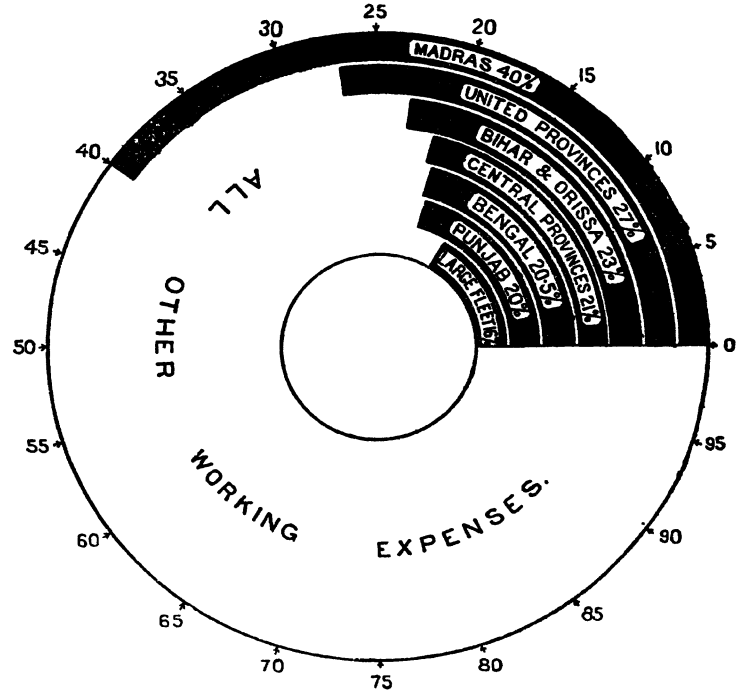


ANALYSIS SHOWING TAX ELEMENT IN

(a) COST OF OPERATING A 30 CWT. MOTOR BUS BY A SMALL OWNER IN RURAL AREAS IN VARIOUS PROVINCES, AND IN

(b) COST OF OPERATING A LARGE FLEET WITH LOW PROVINCIAL AND LOCAL TAXATION AND CONSIDERABLE OVERHEAD

} AS COMPARED WITH ALL OTHER WORKING EXPENSES.



trating the charges which have inevitably to be met by railways in respect of their private road, and we comment later on these peculiar railway obligations and show in Appendix K how the railway figures have been calculated.

61. *Commercial motor transport and the road bill.*—To return to our main theme, in Appendix J we have endeavoured to estimate the contributions of rural motor transport in seven provinces, *vis a vis* the present road bill, as far as we have been able to ascertain it. It appears that the total of these contributions now amounts to over Rs. 2½ crores, while the total maintenance bill is Rs. 4·15 crores, and the revenue expenditure on improvements and construction is Rs. 1·93 crores. The increase in the maintenance bill since 1925-26, since when motor buses have become a serious factor, has been Rs. 55·32 lakhs, but it will be seen that in only two provinces has there been any substantial increase in maintenance expenditure while in two others there has been a decrease. Some saving in maintenance has perhaps been possible owing to the provision of improved surfaces and there has also been some recent fall in prices, but the fall or absence of increase in maintenance expenditure must be attributed in no small part to shrinkage of revenues and failure to provide adequately, which has resulted we believe in some deterioration, and we feel that if the general condition of roads were now as good as in 1925-26, the maintenance bill would in the aggregate inevitably amount to a substantially larger sum. But in view of the increase of all motor vehicles and of the additional metalled milage at charge, it would be difficult to say what proportion of the " real " increase in maintenance would have to be set against commercial motor transport.

62. *Expenditure on " original works ".*—Turning to the expenditure on construction and improvements, it would be necessary, before attributing it in any proportion to any class of transport, to analyse it into various components such as the provision of new metalled roads, and bridges and culverts, only a fraction of the cost of which can appropriately be set against the revenues of to-day: the strengthening and improvement of surfaces, of which perhaps a substantial proportion might be reckoned against commercial transport; and miscellaneous improvements, of which perhaps a smaller proportion could suitably be so reckoned. Be all this as it may, it seems that commercial motor transport alone is in the provinces concerned contributing in all forms of taxation a sum which exceeds both the actual increment in the maintenance bill and the total revenue expenditure on " original works " of Rs. 192·57 lakhs, according to the latest figures, or about Rs. 170 lakhs on the average of the five years ending with the year 1929-30.

63. *Interest on road investment.*—The road bill to which we have referred above does not include any element of interest on the accumulated capital value of roads. The Salter Committee*

* Report of the Conference on Rail and Road Transport, 29th July 1932, His Majesty's Stationery Office, paras. 48 to 50.

in Great Britain, with possibly more complete records than are available to us, and the relatively simple problem of motor transport well nigh monopolising the roads, were unable to recommend that interest should be taken into account against commercial motor transport. We would add that if in India some such *pro forma* calculation were to be attempted and if, for a start, some capital value were now arbitrarily assigned to roads which have no recorded book value, it would still be a matter of extreme difficulty to apportion interest between the diverse classes of traffic that use the various classes of road in greater or less proportions.

64. *Calculations for the future.*—We have been unable to avoid the necessity of attempting, however roughly, to examine the question of the taxation of transport as compared with the road bill. We are aware that our examination has been superficial; that the methods we have adopted are crude; and that our calculations may be erroneous. We believe, however, that we have given due consideration to the available material and that if our calculations are challenged they will at least have the effect of bringing into light more accurate statistical material. But sooner or later it seems that some estimate of the current road cost to the community, of commercial or even of all motor transport, will have to be attempted, and this should not be impossible. Given accurate statistics based on annual re-registration of motor vehicles by various categories; and given periodic traffic counts and surveys such as we suggest in Chapter III, paragraph 32, to determine the components of the traffic on various typical roads; it should not then be impossible for experts to suggest what part of the maintenance and total bill might be set against each component. Even an approximately correct estimate would be of great value in determining the contributions to be made by different classes of motor transport to roads and general revenues respectively, and the proportion which might remain to be carried by general revenues in respect of community and other uses.

65. *Unsatisfactory position of taxation of transport.*—There is a considerable volume of criticism of the present methods and extent of taxation of motor transport, to which we are impelled to refer. While in certain provinces, *e.g.*, Bengal, the imposition of a provincial tax has involved the repeal of local taxes and imposts, yet taxes are still often levied by three authorities, Central, Provincial, and Local, each, it is said, without regard to what is being done by the others, and the whole amounting to a burden.* Apart, for the moment, from the reaction of taxation on the transport business, from the revenue aspect alone there is danger lest excessive taxation by any one or other authority bring into operation the law of diminishing returns in the revenues of all, and as an abnormal instance we would refer to what appears to have happened in Madras. The Madras Motor Vehicles Taxation Act, 1931, involved the abolition of tolls and certain local taxes, but

* Appendix D, paras. 23 to 25.

it has not been possible to abolish also the district board fees for licenses to ply buses for hire, which vary from Rs. 400 to Rs. 2,300 per vehicle per annum. Under the provisions of this Act the tax on a 23 seater 30 cwt. bus may amount to as much as Rs. 960 per annum, but the full tax has not been imposed and that at present in force is Rs. 500. When the Bill was introduced it was estimated that there were in the Presidency some 6,100 motor buses to pay the tax, but actually*:—

4,171 paid the tax in one or two quarters of 1931-32.

3,000 paid for the first three quarters of 1931-32.

2,491 paid during the fourth quarter of 1931-32, and

1,935 paid during the first quarter of 1932-33.

Even if the original estimate of 6,100 was a miscalculation, the decrease in just over a year from 4,171 to 1,935, or a fall of 2,236, would represent something like the following annual loss of revenue to all concerned:—

	Rs. lakhs.
Provincial tax 2,236 × Rs. 500	11·18
District Board license fees on an average Rs. 1,000, 2,236 × Rs. 1,000	22·36
Central taxes on tyres and petrol, assuming an annual milage of 15,000 only, 2,236 × Rs. 688 .	15·38
Total .	48·92

We would not suggest that this great decline in the business, and the resulting loss to various revenues of about Rs. 50 lakhs, was wholly due to high taxes, but we think that their cumulative effect, aggravated in the event by the general depression, would have been substantial even in prosperous times, and while conditions elsewhere in India have not so far approached those in Madras, nevertheless it seems that, sooner or later, if the industry is to flourish and is to contribute to various revenues up to its capacity, some co-ordination will be necessary. As it is, the loss of revenue is having a most serious effect on the budgets of road authorities in the Presidency,† and while, on the one hand, it is claimed that taxation has crippled the industry, on the other, roads will, it seems, inevitably deteriorate.

66. *Appropriate basis of co-ordinated taxation.*—We hesitate to suggest a precise scheme of co-ordinated taxation but we would observe that certain governing principles appear to be taking definite shape in certain other countries, which are generally that taxes on motor transport should comprise four elements:—

(*a*) a contribution to general revenues;

(*b*) a contribution towards the cost of the provision of facilities, sometimes called a payment for "availability" as distinguished from use;

* Madras, para. 31.
† Madras, para. 30.

(*c*) a contribution in respect of improvements and the strengthening of roads; and

(*d*) a contribution in respect of current wear and tear.

There are no reasons why motor transport should be exempted from a reasonable contribution to general revenues.* The element for the provision of facilities is one which has perhaps less application in India than elsewhere. As an instance of its operation we would refer to the case of countries like England where periodic congestion of traffic due to, say, week-end holiday makers, who scarcely use their vehicles at other times and thus do not contribute substantially through a fuel tax, necessitates considerable expenditure in widening and in traffic control. It has, however, some little application in India, and it would seem that this element should be proportionately greater in the case of private vehicles, which are free of all the roads of the country, than in the case of commercial vehicles, to the extent to which the latter are restricted to areas, routes, or zones, or entirely deprived of the use of certain classes of road. The element in respect of improvements and strengthening is in some respects akin to the former but falls upon a rather different class of vehicle because it may be the large and heavy vehicle, which in numbers does not bulk very large, that owing to its axle load, requires considerable expenditure. Finally there is the common element of wear and tear or payment for damage done, and it is now evident that this cannot suitably be met from a fuel tax alone, in which connection we cannot do better than quote from a recent report of a Committee of the National Tax Association of the United States of America.†

> "4. *Co-ordination of gasoline and registration taxes.*—Were it not for certain weaknesses, the gasoline tax alone would serve to meet the problem of special taxation of motor vehicles. This form of impost, however, takes inadequate account of some of the very important factors of road destructiveness.
>
> Fuel consumption reflects the speed at which a car is operated only to the extent that it is driven faster than it was designed to run, while generally any increase in speed is likely to result in greater wear and tear on the roads—at least on certain types

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* The Indian Road Development Committee in para. 64 of their report remarked as follows:—

"The argument has rather been that any tax on transport is economically unsound, but that an even higher scale of taxation would be not unacceptable, provided that it was regarded as taxation *for* transport rather than *on* transport, and that the receipts were spent solely on road development. It is unnecessary for us to discuss this contention at any length. Whatever theories may be held, it is a fact that the present financial system in India requires various forms of transport to contribute to general revenues, and the exemption of motor transport would not be a practical proposal."

† Report of the Committee of the National Tax Association on Taxation of Motor Vehicle Transportation presented at the Twenty-Third National Tax Conference held at Kansas City, Missouri, October 20-24, 1930.

of roads. For instance, the typical automobile passenger car does not consume more fuel a mile when running at twenty* than at thirty-five miles an hour, although, particularly on low-class roads, the wear on the surface is considerably greater at the former than at the latter rate. Failure to take account of differences in the weights of various vehicles is even more clearcut—and distinctly more important than shortcomings in reflecting rates of speed. For example, the six-ton truck may be three times as destructive to the average highway in a State as a three-ton truck, and yet fuel consumption is only 25 or 50 per cent. greater. That means obviously that weight, though a condition of gas consumption, is not at all adequately reflected in the amount of fuel used. But most important of all is the failure of the fuel tax to take account of differences in tire equipment. The three-ton truck, for instance, may effect little wear on certain types of highways if equipped with pneumatic tires, while it is disastrous to the same road if fitted with solid rubber tires. Indeed, the average destructiveness seems to be multiplied by at least three if a vehicle is equipped with solid rubber rather than pneumatic tires. But the amount of fuel consumed by a vehicle fitted with solid is only very slightly greater than that used by one with pneumatic tires."

67. *Adjustment of taxation in India.*—It appears to be desirable, and it has for some time been urged by motor transport interests, that, apart from central taxes, taxation within a province should, for convenience and equity, be consolidated into one provincial schedule, provided, of course, that the necessary adjustments can be made to recompense local road authorities in respect of present revenues and of their expenditure on roads due to motor transport. On the assumption that taxation within the province could generally be so consolidated, it appears that there exist already in India a sufficient number of forms of tax through which to implement the suggested principles. In this way, import duties on vehicles might be held to comprise two elements: (*a*) the contribution to Central revenues and (*b*) part of the " availability " element. Similarly the provincial vehicle tax could cover the balance of " availability "; most of improvements and strengthening; and some part of wear and tear. Import duties on tyres, accessories and spare parts. and duties on fuel, might be considered as covering the rest of the third and fourth elements. On some such general guiding principles the ordinary schedules of taxing authorities could be determined, but there might remain special local taxes on vehicles plying for hire over roads of certain categories, such as expensive ghat or hill roads or, possibily, roads running in competition with a reasonable railway service.

68. *Contributions to the road bill from other sources.*—It has been represented that other road users and beneficiaries should also contribute directly to the road bill in proportion to their benefit, a " betterment " tax on property adjoining a road and

* *Sic.* Probably a misprint for " forty ".

a wheel tax, on bullock carts and other vehicles, having been suggested as reasonable in view of the need of funds for development and of the substantial taxation of motor transport.* As regards the former, we are not concerned with urban areas where the construction or improvement of roads clearly enhances the value of frontage land, and in respect of agricultural land we doubt the practicability of the suggestion. Roads have in the past been almost entirely developed and maintained from general revenues, largely derived from land and other agricultural revenue, and thus a substantial proportion of all roads have in fact up to date been provided by revenues from rural sources. Further we believe that the general improvement resulting from the provision of better roads is already as a rule reflected, though only gradually, in land revenues and so forth. Finally we would remark that any suggestion that the owner of agricultural land immediately abutting on a road should be assessed higher than his neighbours would not be equitable. India is a land largely of small holdings† and the individual whose property marches with the road may not benefit more from that road than his many neighbours situated within a mile or two of it; indeed, rather than agreeing that any additional assessment would be equitable, the owner of frontage land would be more inclined to demand compensation for any improvement or development of that road tending to an increase of traffic, because, owing to the damage caused to his crops by dust, by straying animals, and by the shade of road side trees, actual contact with a road has, if anything, a depreciating effect. Whether or not, however, any additional revenues could be raised from agricultural communities as opposed to individuals for, or because of, the improvement of roads, is a matter for local consideration. We have already remarked that, in so far as roads have been provided from provincial revenues, a substantial proportion of the cost has been borne by agriculture, and of course the revenues of district boards also are largely derived from a cess on the land revenue, frequently even called a "road cess". We doubt therefore whether any additional tax on agricultural property could be justified on the grounds of any "betterment" which has resulted from the improvement of roads in the past, and we feel that, if any additional direct contribution is to be looked for, in future, it could only be in order to finance, by a contribution from a village or a group of villages, a scheme of purely local improvement of village roads and tracks to give

* Memorandum of Indian Roads and Transport Development Association, paras. 19 and 27 (2), Appendix D.

† *Vide*, Report of Royal Commission on Agriculture in India, para. 120 where it is stated as a rough measure of fragmentation that the number of acres per cultivator is as follows:—

Bombay	12·2	Madras	4·9
Punjab	9·2	Bengal	3·1
Central Provinces and Berar	8·5	Bihar and Orissa	3·1
Burma	5·6	Assam	3·1
		United Provinces	2·5

villages an adequate outlet to roads maintained by public authorities.*

69. *Taxation of bullock carts.*—The grounds underlying the demand that bullock carts should be taxed are mainly two-fold. Firstly, that if the principle is accepted that motor transport is to pay for the improvements from which it benefits, and for the wear and tear which it causes, then it is only fair that the bullock cart, which is often an extremely destructive unit, should also contribute;† and, secondly, that by the introduction of a wheel tax on a graduated schedule, the destructive heavy cart with a narrow tyre could be penalised in some measure for the damage which it causes, so that in time the use of such narrow tyres would become comparatively rare. On the first part of the argument, we feel that, in respect of the agriculturist's cart, the argument that agriculture has paid and must continue to pay a very large proportion of the road bill is one which cannot be set aside. There are, of course, a large number of bullock carts in the neighbourhood of towns which are employed solely in the business of transport and a tax upon these would be possible and is indeed already levied in many municipalities; but we doubt whether, away from the towns, it would be possible to draw any clear distinction between the agriculturist's cart employed in marketing his own produce, and sometimes that of his neighbour for a consideration, and that of the villager who, with an uneconomic holding, depends in a large measure upon the business of carting. It is true that in provinces where tolls are in force, *e.g.*, in parts of Bombay and up till recently in Madras, the agriculturist's cart is taxed in the same way as others. But tolls are normally only imposed on metalled roads and a toll constitutes a tax directly proportional to the use made of such roads; within a village all carts may not be equally used on available metalled roads, and within a province the metalled roads available to different villages vary greatly, so that not only would a cart tax bear less fairly on road users than tolls but it would, we fear, introduce many complications and require very careful preliminary examination. In any event that is a matter entirely for local Governments and Legislatures. As regards the second part of the argument, that is to say the value of a sliding scale of taxation as a means for discouraging the use of destructive tyres, there can be little doubt that a great deal of avoidable damage is at present being done and that the community is paying heavily for the privilege of the unrestricted use of any carts or tyres. Certain types of road crust, economical for mechanical transport, are liable to be practically destroyed by heavy carts with narrow tyres, and much of the difficulty and expense of providing a dual purpose road in many parts of India is due as much to the bullock cart as to motor transport. But there is another side to the picture. The wheels of a cart travelling through deep dust or

* Madras, para. 6. *Cf.* Report of the Royal Commission on Agriculture in India, para. 307.

† Memorandum of Indian Roads and Transport Development Association, paras. 8 (*d*) and 21 (Appendix D).

mud have to bite down on to the solid ground below, and, paradoxical as it may seem, we suggest that it is open to question whether an increase in the width of a tyre may not sometimes result in an increase of the tractive effort required to draw the cart over bad unmetalled roads; and we are not entirely satisfied that the narrowness of iron tyres is solely dictated by economy in metal. We feel that efforts could be made by education and propaganda to bring home to the agriculturist the damage for which he is responsible, but so long as part of his journey to market has to be over the worst kind of unmetalled road, we doubt the justification for discriminating taxation against a type of cart which has been evolved for bad roads but may be damaging to metalled roads over which the farmer's cart seldom has occasion to travel, if at all, save for a journey to market and then only for a fraction of that journey. The remedy may be distant, but it appears to be reasonable to suggest that, until better links are provided between the village and the district road, it will be difficult to force any very great improvement upon the bullock cart of the cultivator.

70. *Obligations of railways to provide their own track.*—We have attempted to show above the relation between the taxes paid by motor transport and the present road bill, and it would appear from these that motor transport is contributing, in central, provincial and local taxation, far more than its probable fair share of the cost of development and upkeep of the roads, excluding, of course, any element of interest charges on the assumed capital value of the roads.

We show, as a matter of interest, in the diagram facing page 46:—

(*a*) the tax element payable by motor vehicles in various provinces in relation to their working expenses, and,

(*b*) side by side with these, in relation to the remaining obligations of railways, their peculiar obligations arising from the cost of their track and interest charges thereon, maintenance of track, contribution to general revenues and taxes.

Appendix K explains how the railway figures have been obtained.

It will be seen from these diagrams that the obligations peculiar to railways amount to 33·4 per cent. of the total obligations which had to meet in the year 1930-31, and that the tax element paid by motor transport varied generally from 16 per cent. to 27 per cent., rising to as much as 40 per cent. in the case of Madras owing to exceptionally heavy local taxation. But, as we shall proceed to show in next paragraph, the figure of 33·4 per cent. does not fully represent the peculiar obligations which have to be met by railways.

71. *Further miscellaneous obligations of railways.*—The diagram facing page 46 does not include other minor railway obligations which, though individually not bulking large, in the aggregate must considerably affect the working expenses. It should

not be overlooked that railways provide in the telephone, the telegraph, fixed signals, and the staff to work them, their own traffic control; they pay directly for the inspection of their rolling stock and track and for enquiries into accidents arising from operation; they contribute directly a portion of the costs of the law and order police definitely posted in railway precincts. Further obligations arise in connection with operating staff, many of whom are limited by law as to the hours of work, which involves extra staff from time to time: and at present railways are paying directly for the cost of the inspectorate responsible for seeing that this law is duly observed. Other obligations include such staff benefits as incremental scales of pay, bonus contributions to the provident fund, leave allowances, sick leave and medical attendance, all of which tend to swell the working expenses of the railway. Possibly, as road motor transport develops, obligations analogous to some of the above will be found necessary in that industry: others again, as for instance traffic control, will have to be provided from public revenues, and the cost of them might appropriately be taken into account against the taxes levied on the industry.

CHAPTER VI.—RAILWAY PROJECTS.

72. *Future development of railways.*—We were asked to discuss with local Governments and railways, during our tour, the railway projects contemplated in each province, and to ascertain whether new or improved roads would not more economically develop the areas to be served by the proposed railways. It will be obvious that, during a hurried tour, we could not discuss exhaustively the prospects of each of the numerous railway schemes brought before us, and the opinions we advance regarding these are of course provisional, and subject to further investigation. But on one point we feel that we can lay great stress, and that is that the development of motor transport in India must entirely change the outlook from which branch railway line construction should be viewed; and before the construction of a branch line is undertaken, it should be considered how it is likely to be affected by the road system, present or future, and whether a good road suitable for motor transport would not meet the needs of the area to be developed.

It is almost certain that, if there is a good road between two populous centres unconnected by a railway, there will, in these days, be a motor bus service on it: and a new railway between these points—especially if a metre or narrow gauge line with limited speed—cannot hope to attract much passenger traffic. It is true that we met with a few exceptions to this. We were informed by the Agent of the Bengal and North-Western Railway that his administration would be prepared to build new branch lines, even to connect certain places between which bus services already ran, in the assurance that the railway would attract passenger traffic by providing the cheaper and more reliable service. We feel, however, that the conditions are peculiar in these cases, because the roads in that part of the United Provinces served by the Bengal and North-Western Railway are not generally good, and the railway has a lower scale of third class fares than most other lines.

Generally, in these provinces where good roads can be constructed and maintained, the justification of a branch line must rest largely on the amount of merchandise which it will be required to carry, and which could in no circumstances be carried economically by road.

We may remark that the majority of the branch line projects placed before us were surveyed some years before motor transport had reached it present state of development, and we think it is highly probable that, had this development been foreseen, many of the surveys would not have been undertaken at all.

73. *Summary of railway projects and provisional recommendations.*—In the tables we give as Appendix L, we summarise by provinces and railways, the railway projects under contem-

plation, and we divide them provisionally into the following categories:—

(*i*) Projects which could probably be abandoned in favour of good roads.

(*ii*) Projects which probably cannot be justified owing to the existence of good roads.

(*iii*) Projects probably justified by the traffic offering, especially heavy merchandise, even where a good road exists.

(*iv*) Projects required urgently as through connections.

(*v*) Projects which may be required as through connections.

(*vi*) Projects which can probably be abandoned for miscellaneous reasons.

We must emphasise that we have adopted this classification as a matter of convenience, and it must not be regarded as final. But we think that, in general, it shows that there is little further scope at present for railway development excepting in the case of branch lines likely to carry heavy merchandise or lines that are likely to become important through connections.

74. *Comments on the appended classification of Railway Projects.*—In column 1 we have shown railway projects which could probably be abandoned in favour of good roads; the total milage of these is approximately 1,710 and it is evident that, if roads are to be constructed in their place, here alone there is scope for considerable development.

Most of the lines in column 3 appear to be justified, in spite of existing road facilities, because of the heavy merchandise traffic they are expected to carry, particularly certain projects on the South Indian Railway. One important project also in this column is the Baramati-Baura line for opening up the Nira Canal area. We deal with this fully in our report on Bombay.* Some of the Bengal and North Western Railway projects in this column are for short branch lines connecting towns already connected by road, over which buses already run; the railway claims, however, that the construction of these lines is justified for the reasons we have already given.

There are three projects in column 4 which form important through connections, and which, in the opinion of all whom we consulted, ought to be undertaken as soon as funds permit. These are the Hubli-Saundatti-Belgaum Railway† (Madras and Southern Mahratta), the Bombay-Sind Connection‡ (North Western) and the Dacca-Aricha Railway§ (Eastern Bengal).

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* Bombay, para. 35A (3).

† Bombay, para. 36A (11).

‡ Sind, para. 12 (2).

§ Bengal, para. 42.

The Assam Bengal Railway is pressing for the continuation of the construction of the line to Akyab from Dohazari southwards. but we have placed this project in column 5, as the local Government considers the construction of the road should be continued and the question may then arise whether a railway will ever be justified except as a through connection.*

* Bengal, para. 23.

CHAPTER VII.—PROVINCIAL ROAD PROGRAMMES.

75. *Existing programmes.*—In our detailed reports we have described existing programmes and have ventured certain suggestions from the angle of co-ordinated development of the system of communications as a whole. Existing programmes have to different extents been influenced by the creation of the road development account with effect from the year 1929-30, and in the last year or two this account has provided practically the only development funds available. The direction thus given to recent activities has been criticised by railways on the grounds that, while feeder roads are an urgent necessity of long standing, available resources are being applied to the main provincial roads, to the continued neglect of feeders and the increase of facilities for competition.

76. *Application of road development account.*—We think it desirable therefore to refer briefly to the circumstances in which the road development account was created and the programmes for its use drawn up. In the first place, there underlies the idea that the special tax on petrol was a tax not only *on* transport but a tax *for* transport,* with some implication that a tax on a particular class should be applied to developments for the benefit of that class. It is true that, in evidence before the Road Development Committee, the need for development in the general interests of the country was stressed by more than one local Government,† and this aspect

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* *Vide* footnote to Chapter V, para. 66.

†The following extracts from the reply of the Punjab Government to the questionnaire issued by the Indian Road Development Committee illustrate this:—

6. The Punjab Government would have preferred to discuss the existing road system and its development with reference to the needs of transport generally rather than from the limited aspect of motor transport, but as the Road Development Committee cannot but be interested in this wider view their attention is invited to Part B-II of the Punjab Memorandum for the Royal Commission on Agriculture, 2nd edition, 1926-27. (Page 122, Vol. I, Evidence, Report of Indian Road Development Committee).

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7. (*a*) The question appears to assume that a programme of road development is to be determined by the *needs* of motor transport whatever *this* may mean. A provincial programme of road development should be determined by the needs of the province for roads and in particular by the necessity of adequate facilities for getting agricultural produce to the markets. The development of roads for motor transport will undoubtedly assist towards these objects—*but* the fundamental question is the development of road communication in all its aspects *and* not *merely* the development necessary to keep pace with the needs of motor transport. For instance, the needs of motor transport, if by this is meant the necessity of providing roads for such transport, might well prove so costly as to reduce the amount available for expenditure on roads fit for other forms of *transport*. It is, therefore, necessary to treat road development as a whole and not merely as an incident of motor transport. (Page 123, Vol. I, Evidence, Report of Indian Road Development Committee.)

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was clearly recognized by the Committee. While admitting that strictly speaking it might be correct to confine expenditure from central revenues to projects which could fairly be regarded as benefiting India as a whole, the Committee considered that considerable latitude would be necessary and that, in fact, any project in a provincial programme might be approved which was part of a consistent plan of road development.* But provincial programmes deal usually with provincial roads as at present classified; and, indeed, within the limits of this relatively small and temporary additional provision for road development,† it is doubtful whether a consistent plan of local development could have been framed. The small addition could not have been spread over a very wide field without involving territorial discrimination or dissipating the results.

The Jayakar Committee admitted that they had somewhat confined themselves to main road development to the apparent neglect of subsidiary roads. But they felt that a committee of the Indian legislature should restrict itself as far as possible to questions of central finance and need not intrude too far into the concerns of local Governments and local bodies. Grants from central revenues, they felt, should naturally be limited to projects having some all-India significance and in particular, as the additional tax proposed for road development would fall entirely on motor transport, they felt that the proceeds might be applied to meet its requirements. At the same time they hoped that the indirect benefit to village roads, which would result from their proposals, would be substantial, to the extent to which local Governments and local bodies would be relieved from increased expenditure on main roads, and that it would be found possible to devote more

* Report of the Indian Road Development Committee, para. 77.

† The two-anna tax on petrol brings in about Rs. 100 lakhs per year, 90 lakhs being distributed for programmes and the balance being the special reserve with the Government of India. As we have pointed out in Chapter V, para. 58, 72 per cent. of the total consumption of petrol and thus 72 per cent. of the distributable amount in the account, or a sum of Rs. 65 lakhs, goes to eight provinces. In the five years preceding the imposition of the tax, the total expenditure, provincial and local, on road development ("original works") in those provinces was as follows:—

	Lakhs of Rs.
1924-25	130
1925-26	160
1926-27	160
1927-28	219
1928-29	202

Thus expenditure on development from general provincial and local revenues had been steadily increasing, and in view of the importance of roads the Jayakar Committee probably assumed that this level of expenditure would continue. The average expenditure on original works for the two years preceding the introduction of the tax amounted to Rs. 210 lakhs. The addition of Rs. 65 lakhs or 31 per cent. could not be expected to revolutionize the position or to give a new direction to development.

attention and money to the improvement of others in the future.* The direction thus given to expenditure from the road development account has been followed, but other resources, from which complementary development was looked for, have temporarily failed, and the hope of other development from released resources has generally not been fulfilled. But even so, balanced development will in future, we feel, require a more comprehensive plan, to which available resources in both general and special revenues can be directed, and we will now describe briefly how far such programmes exist.

77. *Madras.*—Beyond the programme for the expenditure of the provincial share in the road development account, there is no comprehensive scheme. Few roads are in charge of the Public Works Department and the initiative in development lies largely with local bodies. From our discussions with the representatives of local bodies in the Presidency, it is evident that, extensive as is the metalled road system of Madras in comparison with that of other provinces, there is great demand from local bodies and the public for improvements and extensions, and from the railways for adequate feeder connections. We have in our detailed report referred to the requirements voiced by local bodies and the public, and in Appendices 5 and 6 have given a list of the roads stated by railway administrations to be necessary. But this review and the detailed statements are not exhaustive and need moreover to be considered in relation the one to the other. In short, we think that a position has now been reached when, while giving full scope to local initiative and prerogative, a comprehensive provincial plan is a necessary preliminary to any further substantial advance.

78. *Bombay.* (a) *Presidency.*—The roads of the Presidency have recently been classified according to traffic and in accordance with the classification adopted by the Road Conference for the road development account, and a programme, or a list of works in order of urgency, has been drawn up for roads of Classes I to III. The programme is divided into four parts:—

	Lakhs of Rs.
(1) Works in progress up to 31st March 1933 . .	24·11
(2) Remaining works, first selection in order of urgency	130·82
(3) Remaining works, second selection in order of urgency	175·09
(4) Remaining works, third selection in order of urgency	124·52

The amounts stated include only those schemes for which estimates exist, but the detailed programme mentions no less than 130 projects for which there are none, and it is therefore incomplete in the matter of estimated cost. The programme covers 83 roads, including main trunk roads, and is thus concerned with

* Report of the Indian Road Development Committee, para. 86. *Vide* also the remarks of the Chairman on page 27 of the proceedings of the Road Conference of April 1930.

what may be called the main skeleton of the road system, but not with purely local development. The total, as far as this has been estimated, is Rs. 4·30 crores, but allowing for the schemes for which there are no estimates, and for some local development, a much larger sum would be needed. We have discussed the programme in our detailed report and we would here only suggest that if any more comprehensive plan is considered possible it should be worked out in consultation with the railway administrations concerned, not only as regards the effect upon the railways of major projects, but also in respect of the provision of feeder roads required by them.

(b) *Sind.*—There are two separate programmes in Sind, (*a*) for the development of provincial roads, and (*b*) for development in connection with the Sukkur Barrage irrigation. The former consists of schemes for the development of the following trunk roads:—

(i) Karachi-Hyderabad;

(ii) Hyderabad-Multan on the left bank of the Indus;

(iii) Kotri-Sibi-Quetta on the right bank; and

(iv) Hyderabad-Umarkot-Rajputana.

The programme in respect of these consists generally of bridging and grading as earth roads, and comprises fifteen projects, of which there are estimates in respect of seven only amounting to Rs. 22,26,989. But, while the works at present contemplated are of low grade first stage development, we have grave doubts as to the desirability of initiating trunk road development on these alignments and we have explained our reasons for these in the detailed report.

79. *Programme for development in connection with the Sukkur Barrage.*—In our detailed report we have referred to this separate programme for road development to serve the area irrigated by the Sukkur Barrage scheme. This programme consists of a comprehensive scheme of the cheapest form of development, averaging, for Type A, Rs. 1,000 per mile, Type B, Rs. 4,500 per mile, and Type C, Rs. 25,000 per mile. The programme contemplates 273 miles of Type A, 262 miles of Type B, and only 30 miles of Type C, at a total cost of Rs. 22 lakhs for original outlay, and Rs. 2½ lakhs for maintenance; and this is a programme which should, we consider, be proceeded with as soon as possible.

80. *Bengal.*—Here again there is no comprehensive programme of co-ordinated development of the nature such as we contemplate as being desirable for a balanced system. The physical peculiarities of deltaic Bengal and the far-reaching effects of road embankments upon drainages, appear to us to require in an unusual degree a very careful study in advance of the possibilities and effects of a comprehensive scheme in all its aspects. In an interview which we had with the Hon'ble Minister for Local Self-Government, the Hon'ble Mr. Bijoy Prosad Singh Roy, the Hon'ble Minister said that he believed a comprehensive programme to be desirable, but

emphasised the fact that so long as (*a*) the future of the road development account after 1934 remained uncertain, and (*b*), no definite policy could be adopted in respect of contributions from motor transport to future maintenance, certain of the circumstances in which a programme could be financed and maintained remained obscure, and that, in fact, important premises were lacking upon which to make a plan. We agree that until these points are cleared up the framing of a scheme will be difficult. There can be no disagreement, however, as to the necessity for further development, and as to the peculiar difficulties in Bengal, and, for the reasons which we have stated, we consider that, in addition to the railway administrations, whose lists of urgent road requirements we have reproduced in our detailed report, and to the representatives of steamer companies, who have similar needs, any programme of road development would require the co-operation also of the irrigation authorities, the public health authorities, and those responsible for the maintenance of inland waterways.

81. *United Provinces.*—Here again there is no comprehensive programme covering all classes of development, although, as will be seen from our detailed report, there are clearly urgent needs for more and better roads and for feeders to the railways. But in the United Provinces in particular, owing to the very large milage of kankar roads unsuited to modern conditions, and owing to the shrinkage of resources for maintenance, the strengthening and improvement of existing roads must be to a great extent a prior charge, and we have ventured to suggest that, including this on the cheapest possible lines, an outlay of the order of Rs. 6 crores spread over ten years would be necessary for any definite advance. This estimate is rough and approximate and may be wide of the mark, we attempted it in the hopes that it might be possible to frame some general picture as to the total sum necessary to advance road communications in India a definite stage further.

82. *Punjab.*—Assuming that the improvement of all provincial or arterial roads, up to a reasonable standard compatible with traffic needs, may be assumed to represent the programme in respect of such roads, we have ventured, with the assistance of Mr. S. G. Stubbs, O.B.E., the officer deputed to co-operate with us, to estimate the cost of completing this system and to suggest certain modifications which we think worthy of consideration. We have further, as a result of our discussions with district officers and representatives of the District Boards, and on general considerations, suggested the outline of a general programme of development and improvement of other roads, comprising not only additional metalling, but also the general improvement of a further 10,000 miles of earth roads, including feeder and link roads to railway stations. Further, owing to the relatively high cost of hard surfaced roads, we have suggested that some definite provision might be considered for development to an intermediate stage, and that it would be desirable to prosecute experiments with the intermediate types suited to varying local conditions. Many items in

this rough programme would require discussion with the railway administration, and we have included a list of feeder roads stated to be necessary. Any such programme should, we think, be finally reviewed in close co-operation with the railway administration. The total cost of the programme we estimate roughly at Rs. 4 crores, spread over ten years.

83. *Bihar and Orissa.*—The present programme amounts to a total of Rs. 11·17 lakhs in respect of works actually in progress, mainly from the road development account, and to a further Rs. 54·75 lakhs for improvements to and bridging on 14 roads, which await the provision of funds. The programme has, we think, as elsewhere, been influenced by the road development account, and in our detailed report we have discussed the needs of various districts to which our attention was directed, some of which are possibly in present circumstances of comparable urgency. We have therefore ventured to suggest the desirability of some review on more comprehensive lines with the object of applying available resources to the greatest immediate needs, without necessarily first completing provincial trunks. But we are unable to estimate the expenditure which would be involved in such a programme, indeed the amount of money which could be sunk in road development in Bihar and Orissa is almost unlimited; but, having determined what sum might be available, we think that the programme should undoubtedly include the more urgent local requirements, not forgetting the feeder roads, some of them of very short lengths, which are required by railway administrations and which we have detailed in Appendices 4-6 of the provincial report.

84. *Central Provinces.*—There is in the Central Provinces and Berar a very comprehensive programme of road development, drawn up by districts and co-ordinated by divisional committees, representing the most urgent requirements of the province as a whole. The programme of "first urgency" amounts to Rs. 2·38 crores round for roads, including a certain number of major bridges, with a further Rs. 0·31 crores for schemes of bridging only, or a total of Rs. 2·69 crores. We have examined this programme and have in our detailed report drawn attention to schemes regarding which we consider that the railway administration concerned might be consulted. Serious consideration should, we think, be given to the arguments which may be urged on behalf of railways, and particularly light railways, as these are already suffering severely from road transport competition. We have also drawn attention in the appendices to the feeder roads required by railway administrations, and these and other feeder roads, and the stimulation of development of more purely local roads, should, we think, be considered in connection with any large scheme of development.

85. *Assam.*—The programme, which is practically in abeyance, has been drawn up in conformity with the following decisions:—

(1) "That the roads constituting the main road system of the province shall be improved and maintained by Govern-

ment; and that all other roads connecting with the system shall be in the charge of the local Bodies and Municipalities."

(2) "That in tackling the problem of improving the main system of roads, the extensive method be employed by which the greater part of the funds available would be spent in raising, widening and bridging where necessary, the system generally, and a relatively small part in metalling."

(3) "That in preparing a programme of improvements the following principles should be observed:—

(*a*) That all important feeder roads leading from the railway stations and steamer ghats to the main roads of the system should be first bridged, raised and widened, where necessary, and metalled.

(*b*) That roads running contiguously with railways should for the time being ordinarily be considered of secondary importance."

The programme amounted to a total of Rs. 71·83 lakhs, excluding establishment and tools and plant charges, and is being brought temporarily to a close with an expenditure up to the end of the current year of approximately Rs. 32·83 lakhs, leaving a balance of Rs. 39 lakhs for works remaining to be carried out. In general, we believe the programme to be one which represents the road portion of balanced development, and in a meeting which we had in Shillong, which was attended by representatives of the railway administrations principally interested, there were no substantial criticisms of the programme as a whole. Certain considerations may be advanced on behalf of the railway administrations in certain cases, and in respect of the provision of feeder roads to steamer ghats, the programme does not go as far as the steamer companies would wish; but subject to some adjustment, and possibly extension, in consultation with these two interests, the programme is one which could, with great advantage, be undertaken and completed as soon as funds are available.

86. *North-West Frontier Province.*—In the North-West Frontier Province there is a current programme of development by the provision of bridges and the improvement of earth roads, which is being financed from the provincial share in the road development account. Beyond this there is no present scheme.

87. *Total expenditure involved in a ten-year programme and the question of development from loan funds.*—We are thus unable to suggest what total capital sum might be required for a general ten-year programme of development in the Governors' provinces. The only definite figures of any sort are as follows:—In Bombay the programme for the Presidency amounts to Rs. 4·30 crores, but is incomplete and a much larger sum would apparently be involved. In Sind the provincial road programme amounts to Rs. 22·27 lakhs, but should, we think, be reconsidered, while the programme for

development in the Sukkur Barrage area amounts to Rs. 22·02 lakhs, making a total of Rs. 44·29 lakhs. In Bengal and Madras and the North-West Frontier Province there is no programme and no means at our disposal for estimating even roughly to what sum such a programme might amount. In the United Provinces we have suggested that something of the order of Rs. 6 crores would be required to meet urgent requirements. In the Punjab a programme of Rs. 4 crores could quickly be put into shape. In Bihar and Orissa a programme of Rs. 54·75 lakhs is in existence, but might be substantially amended or extended in view of present day considerations. In the Central Provinces there is a programme amounting to Rs. 2·69 crores which might in some respects be modified and could, of course, be substantially extended were funds available; and in Assam the existing programme of Rs. 39 lakhs could be restarted immediately.

The difference in the magnitude of the various programmes, existing or suggested, reflects principally the degree to which future needs have been worked out generally with regard to probable *revenue* resources. The figures which we have been able to collect or suggest amount to a total of Rs. 18·43 crores, but, having regard to the limited nature of certain of the programmes, and to the fact that in respect of three Provinces no figure whatever is available, we are unable to suggest what might be the sum involved in a ten-year programme of development in the nine provinces and Sind. We would only remark that, assuming it were possible to proceed by way of loan, the equated payments on a 30-year loan, with interest at 5 per cent., would amount to 6·505 per cent. or Rs. 2·602 crores per annum on a loan of Rs. 40 crores. But before provincial programmes for loan development could be worked out, the following questions would apparently arise:—*

(*a*) How far recent provision for the maintenance of the present road system is adequate, or to what extent, if any, additional provision is necessary?

(*b*) To what extent the strengthening or improvement of existing roads will result in economy in maintenance, and to what extent such expenditure can be justified on that ground?

(*c*) What funds will be necessary, and how are they to be provided, for the maintenance of the extended system at the end of the ten-year programme?

(*d*) What expenditure on development can justifiably be charged to capital, the extreme views being:

(*i*) that only permanent items of work such as bridges, land, and foundation of road crusts, which will have a life exceeding the period of the loan, can justifiably be so debited, and

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* *Cf.* Memorandum of Indian Roads and Transport Development Association, paras. 9 to 23, Appendix D.

(*ii*) that, provided the provision for future maintenance is visible and beyond reasonable doubt, any expenditure constituting a definite improvement, even if merely upon the re-conditioning of earth roads to bring them to a maintainable condition, is a justifiable charge against capital.

88. *The legitimate uses of loan funds.*—The former is, of course, the safer principle. But in so far as it would, in the case of most hard surfaced roads, involve the concurrent expenditure of revenue upon the non-permanent part of the structure, that is the wearing surface, the complication would be introduced that the amount of capital which could be spent, and hence the progress, would depend upon year to year complementary provision from revenue, thus possibly defeating one of the objects of capital outlay, *i.e.*, the uninterrupted execution or work on a large scale, or embarrassing the revenue position. By this principle, also, earth road improvement would generally be excluded from the purview of a loan programme. The latter view of the matter would give more immediate and definite results and, to the extent to which, with such a general improvement, India could absorb a very much greater number of motor vehicles, would bring the quickest return in the way of increased revenues from motor transport, while affording immediate benefit to all other road users. To the extent to which motor transport is competing with railways rather than affording access to them, which may be said to be partly due to the unbalanced state of the existing road system, the latter course would more quickly correct the balance and assist the railways. In India at present there is one motor vehicle to about every 2,500 of the population. It is not suggested that upon this basis the number of motor vehicles in India can approach that of the more industrially developed countries, but the number could be ten times as great as now, before it approached that per head of population in such countries as Brazil, Mexico, French Morocco, and Ceylon;* and it seems reasonable to suppose that a large scheme of development will bring in substantially increased return from taxes on motor transport.

Again, early all-round improvement will be of general benefit. Where this is a cash transaction, we believe from the enquiries which we have made that the saving in cost of carting over a metalled road, as compared with an unmetalled road, amounts to not less than 25 per cent., and there will obviously be some saving, if not so great, between the cost on an improved earth road and that on a bad one. We believe that the difference in the cash transaction reflects the concealed difference in the case of the vast majority of agricultural marketing which is not on a cash basis. A general all-round improvement of rural roads would thus be of immense benefit, and we feel that, while low cost improvement is of a nature which, on the strictest principles, might not be re-

* "Facts and Figures of the Automobile Industry," 1931 Edition, pages 24 to 26. United States National Automobile Chamber of Commerce Publication.

garded as an appropriate use for capital, the magnitude of the work involved in such improvement in the aggregate, would place it beyond the bounds of what can be hoped for from revenue resources within any reasonable period of time. If, therefore, the question of future maintenance can be put upon a satisfactory basis, we venture to think that full value can only be obtained from loan development if it is made applicable to all classes of road, and not only to works of so permanent nature that, whatever happens, they will outlive the period of the loan redemption.

89. *Other advantages of loan development.*—The economies that can be effected by uninterrupted work on a large scale should be substantial, and particularly if times of low prices can be utilised. Revenues dependent upon the vagaries of the monsoon cannot be relied on to afford uninterrupted progress, and it is when revenues suffer that labour is cheap and employment most desirable. Nor need a loan programme necessarily mean unavoidable commitment to the whole. If carefully planned, work can be slowed up when necessary, or even brought to a close, with the most urgent needs provided for, and no loss in respect of what has been done. Very large or long term contracts are not essential. In no other way, possibly, can the difficulties attending the piecemeal satisfaction of local demands by provincial subsidies be overcome.

90. *Conclusion regarding future road development.*—We believe, therefore, that only by a comprehensive scheme of development of all roads on a consistent plan, can the present lack of balance in the road system be corrected; and that, to be effective, such a plan must be impartially financed from loan funds to the extent to which the provision for future maintenance can be relied on. Such programmes as exist are more for development of main trunk roads than for all-round improvements. The preparation of more comprehensive plans appears to be necessary if advantage is to be taken of the turn in the financial tide, when it comes. These plans will take time to work out and we believe that the present opportunity should be taken and that rough schemes, on the basis of milages and the average rates of cost per mile, and even, in the case of rural development, on the basis of so many miles per square mile of area, might, with great advantage, be taken in hand at once as very many preliminaries would have to be settled before it would be possible to embark upon any comprehensive plan of development from loan funds. In the meantime two matters appear to us to stand out prominently. The first is the need for evolving and testing all reasonable possibilities in the direction of low cost developments, and in this connection we venture to think that much more experiment is possible and desirable, *e.g.*, in the use of machinery for earth roads, the artificial treatment of soils, and the evolution of " stage development " between the earth road and the high class surface treated metalled road. The second is the question of the type of motor transport vehicle for which provision is to be made. At present the bulk of rural bus traffic is in the 30 cwt. chassis type of vehicle. With a return to prosperity, and the possible

introduction of measures tending to favour substantial private enterprise and larger concerns operating buses, there may be a tendency for the size of bus to increase. Roads in India must remain dual purpose roads, but surfaces which are evolved as economic under mixed traffic on which the motor element is preponderantly in the 30 cwt. vehicle class would clearly be inadequate to carry an increasing traffic in, say, 4 and 5 ton capacity vehicles. It has been suggested that, in general, a vehicle of a capacity not exceeding $2\frac{1}{2}$ tons will, as far as can be foreseen, be adequate to the requirements of rural transport in India for many years,* and if this is the case then there should clearly be general agreement that roads will be designed for vehicles of this weight and that vehicles of greater weight will not generally be permitted upon rural roads. Be the weight of the vehicle required for the future development of rural transport in India what it may, quite clearly there should be some general agreement as to the type of vehicle to be provided for, and a general provision to this effect in provincial motor vehicles rules.

* "Motor Vehicle Regulations in Relation to Road Construction and Maintenance. Preliminary Considerations." *Indian Roads, July 1931.*

CHAPTER VIII.—CO-ORDINATION.

91. *Need for co-ordination in many respects.*—Over the whole field of the development and control of communications and transport, which in the foregoing chapters we have endeavoured to survey, the most salient feature is the apparent need for closer co-ordination of various activities, in the interests of the community and the tax-payer, whose interests are fundamentally one, and whose requirements are the same, namely an efficient system of transport at the lowest possible cost. Some lack of balance in the road system; imperfect co-ordination in the past between various road authorities, and between them and railways; indifferent contact and absence of community of interest between local Governments and railways; inequalities in taxation by different authorities; disparity in the regulation of road and rail transport; and the need for determining and prescribing the appropriate field of each; all suggest the need of some uniform policy, whereas constitutional divisions of functions cut across almost every one of these subjects.

92. *Constitutional difficulties.*—This problem has so obtruded itself on our attention that we are unable to ignore it. Indeed, close co-operation appears to be essential to economic development. We find very great difficulty, however, in putting into any definite form the suggestions and impressions which we have received regarding the nature and functions of any hypothetical co-ordinating authority or authorities, because the difficult constitutional aspects of these are beyond our purview*. In what follows, and in every thing we have written, therefore, we have, while appreciating the main constitutional implications, assumed that, in the ultimate resort, a constitution is, in matters of detail, a means rather than an end, and that where in the common interest there is need for adjustment, the case will receive consideration on its merits. But, in any event, these questions have two aspects: firstly, that within established constitutional compartments; and secondly, in respect of connecting channels between these compartments.

93. *Co-ordinating authority within constitutional compartments.* (*a*) *At the Centre.*—The Central Government will presumably remain in control of Railways, Posts and Telegraphs and Civil Aviation. Whether or not it will contribute in future in some way towards the road bill, it will still clearly be concerned with roads and road transport, in their relation to railways, and because of their contribution to Central revenues. It seems, therefore, that the Central Government will be concerned to a greater or less extent with all communications and transport, and, to that extent, it has already been suggested that its functions should be concentrated in one department†.

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* *Cf.* Memorandum of the Indian Roads and Transport Development Association, paras. 4 to 8, Appendix D.

† *Vide* Report of Indian Road Development Committee, para. 90, reproduced at Appendix M.

But opinion in certain quarters favours not only this concentration into one department, but also the creation, both at the centre and in the provinces, of Boards of Communications with certain definite functions*. The functions of a Department of Communications would so intimately and diversely concern public interests, that some machinery, to preserve contact with the many interests concerned and with public opinion, would seem to be necessary. But at this stage we would not venture any opinion as to the precise means of effecting this; obviously the machinery cannot be designed until its functions are decided. And it is in this machinery that contact between constitutional divisions can probably best be provided.

(*b*) *Within the provinces.*—It is here that contacts are weak, and here again opinion favours the constitution of Boards of Communications as co-ordinating bodies. With the reservation that, as explained by the Indian Road Development Committee†, it is difficult to contemplate the creation of bodies usurping Governmental functions and those of the legislatures, such Boards might, we think, be set up with advantage in every province; railway and other interests being adequately represented. We would even suggest that, in order to impart reality to the deliberations of these bodies, and to afford them full and real scope, the sanction of road projects or schemes; the consent of local Governments to any railway project, subsidised or not; the general administration and revision of motor vehicle rules; the prescription of " zones "; expenditure by railways on counter-competition; and all cognate matters, should be submitted to their advice. We would venture to add that, with such bodies in existence, the allocation to others of the present functions of Railway Advisory Committees might be undesirable. Bodies of the nature we suggest should be capable of preserving close contact between Railway Administrations and the public, while the continued existence of separate bodies with this function would tend to prevent co-ordination.‡

94. *Procedure in the case of difference of opinion in the provincial Boards of Communications.*—The railways have complained that although certain provincial Road Boards or Boards of Communications already include railway representatives, nevertheless full weight is not always given to the railway point of view. In existing Boards consisting of representatives of Government Departments, of local bodies and of the legislature, the railway representative is often alone in his view, and may, owing to lack of community of interest, be over-ruled in respect of such matters as schemes of road development to which he objects. To however great an extent closer co-ordination may be possible, we think it

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* *Vide* Memorandum of the Indian Roads and Transport Development Association at Appendix D.

† Para. 87, *vide* Appendix N.

‡ In Sind we were impressed by the lack of co-ordination resulting from the Board of Communications being sub-divided into a Sub-Committee of Roads and another of Railways.

must be expected that differences of opinion will still arise. In such an event, it has been suggested to us that the railway administration or the Central Government, as trustees for monies invested in railways, should be able in the ultimate resort to take the case to arbitration. Who the arbitrator might be and what machinery should be set up for the reference of such disputes, we are unable to suggest. But while we hope that, with better mutual understanding and co-operation, the occasion might seldom arise, we believe the suggestion to be worthy of consideration.

95. *Divisional Committees.*—In Chapter III, in discussing the regulation and control of motor transport, we have suggested that this might be upon a divisional basis, with the assistance of small representative committees whose functions in that field we have outlined; but we think that those functions might be expanded and that something of the nature of divisional Boards of Communications would be desirable. If it is the case that there is a lack of contact at headquarters between provincial and railway administrations, we have been even more impressed during our enquiry by its almost entire absence outside. This is perhaps natural when decisions are made at headquarters, and when railway and civil districts and divisions are not co-terminous, but it is, nevertheless, the cause, we believe, of a certain lack of mutual sympathy between railways, the public and district officers, and in part accounts for the fact that road projects are often locally conceived and submitted for sanction without regard to the railway point of view, or to any plans that railways may have, so that railway objections to matured road projects are often too late to effect much except mutual irritation. We think, therefore, that co-ordination at an earlier stage in planning rail or road projects, and closer general contact at different centres, might attend the creation of small counterparts of Provincial Boards at, say, divisional headquarters. We do not think that in such bodies there would be danger of setting up dual machinery or dual channels of communication with headquarters, so long as the divisional boards corresponded with provincial Governments through the Commissioner.

96. *Conclusion.*—Our terms of reference were not precise, and it may be that we have imparted a certain elasticity to our interpretation of them. We have, however, to the best of our ability, confined ourselves to matters which have specificially been brought to our notice as definitely bearing on the subject matter of this preliminary survey. We have found the keenest official and public interest in all these various matters, and have felt impelled to accord to them the space which that interest requires. As far as possible, in this summary of the results of our investigations we have supported our statements by references to the detailed provincial reports or to other documents, and we believe that we have ventured no material statement or opinion which cannot be so substantiated.

CHAPTER IX.—SUMMARY OF CONCLUSIONS AND ACKNOWLEDGMENTS.

97. *Summary—*

CHAPTER I.—SKELETON REVIEW OF THE EXISTING COMMUNICATIONS. BEGINNING OF ROAD COMPETITION WITH RAILWAYS. THE MOTOR TRANSPORT CASE.

(1) We have attempted a general review of the existing system of communications as a background for our report. (Para. 1.)

(2) The development of the metalled road system has been from the trunks outwards. Trunk, main and feeder metalled roads have frequently been overtaken by the subsequent construction of a parallel railway. A skeleton survey should show the extent to which the present railway mesh satisfies present needs and further road development is likely to be so overtaken. (Para. 2.)

(3) We have prepared provincial maps to illustrate the salient features brought out in our enquiry and have thereon, in particular, drawn attention to the areas " commanded " by railways in country having a density of population of 100 and over, and we think that, in general, railway development may have reached a stage approaching saturation for existing conditions of agriculture. (Para. 3.)

(4) We submit a statistical picture of existing communications showing that, excluding Madras, 30 per cent. of metalled roads in India are parallel with railways while 48 per cent. of railways have metalled roads parallel with them and within ten miles. In certain provinces less than one-third of the whole area having a density of 100 per square mile and over is " un-commanded " by railways. Generally in those areas there are about 20 or 30 square miles of area for every mile of railway, and from $4\frac{1}{2}$ square miles in Madras up to about 20 square miles elsewhere per mile of motorable road; while, if all roads in charge of public authority are taken into account, there would, excluding the Central Provinces, be from 1·8 square miles to 5 square miles per mile of road; thus the general improvement of all roads nominally maintained by public authority would bring facilities within closer reach of all. (Para. 4.)

(5) We think that any comprehensive plan of road development should take into consideration the possibility of linking the more important villages with the public road system. (Para. 5.)

(6) We feel that the road system in India has now become somewhat unbalanced owing partly to the large expansion in the other activities of the local bodies which has outrun the increase of their resources and has resulted in neglect of local roads; partly to the classification of roads, limiting the provincial purview to trunk and main roads; so that recent development and regular main-

tenance has been preponderantly in the field of provincial roads. We believe that, in order to restore the balance, a comprehensive plan will be necessary, but that the question of adequate provision for future maintenance should first be put on a proper footing. (Paras. 7—9.)

(7) In addition to the case put forward on behalf of the railways we draw attention to that put forward by the Indian Roads and Transport Development Association. (Para. 11.)

CHAPTER II.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

(1) Railways have already investigated motor competition and from this material with such modifications as we have been able to suggest, we arrive at the conclusion that Class I railways are losing about Rs. 190 lakhs per annum. The greatest loss is in the United Provinces (Rs. 45 lakhs); the railway most seriously affected is the North-Western (Rs. 39 lakhs). These figures are if anything an over-estimate. (Paras. 12 and 13.)

(2) The carriage of merchandize by motor transport in competition with railways has not at present developed to any great extent. (Para. 15.)

(3) The majority of motor transport in competition with railways is within the zone of 1 to 50 miles but we give instances of competitive traffic over greater distances. (Para. 16.)

(4) The effect of motor competition upon light railways is very severe and these are peculiarly vulnerable. (Para. 17.)

CHAPTER III.—CONTROL AND REGULATION OF PUBLIC TRANSPORT.

(1) There is considerable difference in the degree of external control over railways and road transport respectively. There appear to be grounds for considering that motor transport has temporarily outrun the machinery for its control. (Paras. 18 and 19.)

(2) We draw attention to the main complaints of the railways in respect of discriminatory regulation of the two forms of transport. (Para. 20.)

(3) It appears that, apart from its probable effect upon railways, public opinion would support some tightening of the control of motor transport in order to give the public a more convenient, safer, and more reliable service. (Paras. 21 and 22.)

(4) The evils from which public service motor transport is suffering are largely due to excessive competition, un-employment among buses, and their concentration on the more populous routes. The number of licenses for buses on any route might be restricted; the issue of time-tables, publication of schedules of fares and compulsory insurance might be prescribed. Such control would raise the business to a better and more economic condition. (Paras. 23—28.)

(5) While competitive rates of fare are at present substantially lower, the economic fare for the ordinary rural bus appears to be about 5 pies per passenger mile. (Para. 29.)

(6) Competition may increase in range and intensity. Motor buses are a great convenience to the public and where they are definitely superior, we do not think that the public can be deprived of them. Where, however, they are not so greatly superior we doubt the wisdom of paying for dual facilities causing inroads into railway revenues. A system of zoning of motor transport on parallel competitive routes within a range of about 50 miles might be considered. We do not think that this would seriously affect present businesses, or substantially reduce the losses of railways. It would, however, localise competition to what appears to be the appropriate field of motor transport. (Paras. 30 and 31.)

(7) Road authorities, registration authorities, taxation authorities, and railways are all interested in statistics regarding commercial motor transport. These authorities at present often work independently; duplication of work would be avoided and proper statistics would be available if the traffic authority kept and published such statistics. (Para. 32.)

(8) Adequate control of motor transport would require study and co-operation between various authorities. A civil district appears to be too small an area for this. Control by areas equivalent to a Commissioner's Division with the advice of small representative committees would be convenient and economical. (Para. 33.)

Chapter IV.—Future policy of railways in regard to motor competition.

(1) In the face of a possible increase of competition from motor transport three courses are open to railways:—

(*i*) Inaction within the zone allotted to motor transport.

(*ii*) Counter-competition, and

(*iii*) the operation of motor transport by the railways. (Paras. 34 and 35.)

So large a proportion of railway earnings comes from third-class passengers within the zone 1 to 50 miles that railways would not lightly consent to entire loss of traffic within that zone. Zoning of motor transport may be controversial and cannot be expected to afford railways full protection. (Paras. 36—39.)

Counter-competition is costing money, and in certain cases apparently out of proportion to the probable return and to the capital invested in the competitive buses. (Paras. 40—42.)

For these reasons the solution in many cases may lie in the railways themselves operating motor transport on parallel roads Railways would have to be protected from uneconomic competition from other concerns. (Paras. 43—52.)

There are, of course, objections to railways going on the roads, but in view of the amount of public capital invested in railways it is arguable that where the railways, and particularly light railways, having developed a route cannot offer on the railway the facilities which motor transport affords, they should at least have the option of doing so on the roads. (Para. 53.)

CHAPTER V.—THE TAXATION OF MOTOR TRANSPORT AND OBLIGATIONS PECULIAR TO RAILWAYS.

(1) There is considerable criticism of present taxation of motor transport. (Para. 54.)

(2) There are great difficulties in the way of estimating the total present contributions of motor transport through various taxes. (Para. 55.)

(3) We have, however, attempted a rough calculation and it seems that motor transport as a whole is at present contributing about Rs. 8·30 crores in Central, provincial and local taxes and fees. (Paras. 56 and 57.)

(4) On the basis of petrol consumption and assuming that about 60 per cent. of the transport uses extra-municipal roads the contribution by extra municipal motor transport in eight Governor's provinces through various taxes would appear to amount to about Rs. 360 lakhs against an annual expenditure of Rs. 167 lakhs for original works and an increase in the maintenance bill since 1923-24 of Rs. 90 lakhs. But we cannot suggest to what extent the latter figure represents the increase due to the advent of motor transport. (Para. 58.)

(5) Turning to commercial transport only, it seems that in 7 provinces this is now contributing over Rs. $2\frac{1}{2}$ crores, the increase in the maintenance bill since motor buses became common having been Rs. 55·32 lakhs. But we do not think that this represents the real increase in the cost of maintenance, nor could we say what proportion should be set against commercial transport. (Para. 61.)

(6) We consider that for the future it should be possible to make a more accurate estimate of the extent to which motor transport might contribute to the road bill. (Para. 64.)

(7) The independent taxation of motor transport by different authorities appears to be unsatisfactory and the action of one may bring into force the law of diminishing returns in respect of the revenues of all. (Para. 65.)

(8) Taxes paid by motor transport might be considered as covering four elements, and even if taxes within a province are consolidated into one, there are already a sufficient number of forms of assessment to allow of scientifically graded schedules. (Paras. 66 and 67.)

(9) We do not think that substantial additional contributions to the road bill can be looked for from other road beneficiaries

although local contributions for schemes of village road development might be forthcoming. (Paras. 68 and 69.)

(10) We have endeavoured to show the tax element in the cost of operating rural bus services and this appears to vary between 16 and 21 per cent. except in the case of Madras where it may amount to 30 or 40 per cent. (Para. 60.)

(11) We have also shown the obligation of the railways for the provision and maintenance of their track and in contribution to Central revenues. (Paras. 70 and 71.)

Chapter VI.—Railway Projects.

(1) We have examined a large number of pending railway projects and make provisional suggestions as to these in the light of the recent development of motor transport. We have naturally been unable to examine these in any great detail, but we are emphatic that the advent of motor transport must entirely change the outlook from which branch line railway projects should be viewed. (Para. 72.)

(2) We have provisionally divided pending railway projects into six classes:—

(*i*) Projects which could probably be abandoned in favour of good roads.

(*ii*) Projects which probably cannot be justified owing to existence of good roads.

(*iii*) Projects probably justified by traffic offering, especially heavy merchandise, even where good roads exist.

(*iv*) Projects required urgently as through connections.

(*v*) Projects which may be required as through connections.

(*vi*) Projects which can probably be abandoned for miscellaneous reasons.

and we comment on this classification. (Paras. 73 and 74.)

Chapter VII.—Provincial Road Programmes.

(1) Existing programmes of road development have been criticised by railways and as these have been largely influenced by the creation of a central road development account we discuss the circumstances in which that account was brought into existence. (Paras. 75 and 76.)

(2) Complete programmes for development on a consistent or comprehensive plan do not exist in many provinces but we discuss such programmes as we have been able to examine and suggest the desirability of framing comprehensive programmes in all cases. (Paras. 77—86.)

(3) The total estimated amount of available programmes is Rs. 18·43 crores but this in no way represents what would be required for an all round plan of development in all provinces, and

we assume that a substantially larger sum would be necessary and discuss the possibility of proceeding by way of a road development loan. (Paras. 87—90.)

Chapter VIII.—Co-ordination.

(1) The most constantly recurring feature in our investigation has been the need for co-ordination over a wide range of subjects almost all of which are cut across by constitutional divisions, but we assume that where common and co-ordinated action is agreed to be necessary constitutional adjustments will be possible. (Paras. 91 and 92.)

(2) We draw attention to previous recommendations regarding the concentration of the functions of the Central Government in respect of all forms of communication and transport into one department, and we refer to the suggestions for some central advisory Board of Communications; the revival or creation of provincial Boards of Communications; and the allocation to these of as wide a scope as possible. (Para. 93.)

(3) It has been suggested that in the event of a difference of opinion between the road and railway authority it might be possible to take the matter to arbitration. (Para. 94.)

(4) We think it highly desirable to provide for co-operation and co-ordination outside the headquarters of Government and we suggest that there might be Divisional Committees not only to advise on the control of motor transport but also within their sphere to be small counterparts of Boards of Communications. (Para. 95.)

98. *Acknowledgments.*—Throughout our enquiry we have been greatly indebted to the hearty co-operation not only of the officers deputed by local Governments and railway administrations to work with us, to whom in particular our thanks are due, but to many other officers of local Governments, railway administrations and local bodies, and the many business interests and members of the public with whom we have come in contact. The inadequate notice which we had perforce to give of our visits has, we are afraid, proved the source of inconvenience to many, but the response to our request for information has been unfailing.

We also wish to acknowledge the services of our stenographers (Mr. N. Muthuswami and Mr. Ram Pershad Agrawal) who have, throughout our tour and in the preparation of our reports, afforded us the very greatest assistance. They have cheerfully worked long hours throughout the whole period often under extremely trying conditions.

(Sd.) K. G. MITCHELL,

(Sd.) L. H. KIRKNESS.

APPENDIX A.

Milage of Railways, Metalled and Motorable Unmetalled Roads and Metalled Roads and Railways parallel and within 10 miles; and percentage of Metalled Road and Railway milage so paralleled.

—	Railways all gauges.	Metalled Roads.	Improved or Motorable Unmetalled Roads.	Total Motorable Roads.	Metalled Roads and Railways parallel and within 10 miles.	Percentage of	
						Metalled Roads paralleled by railways.	Railways paralleled by Metalled Roads.
	Miles.	Miles.	Miles.	Miles.	Miles.		
Madras	4,377	23,415	3,700	27,115	2,681	11½	61
Bombay Presidency	2,537	9,400	4,000	13,400	1,510	16	60
Sind	800	183	..	183	35	19	4
Bengal	3,450	3,500	..	3,500	1,234	35	36
United Provinces	4,952	7,776	..	7,776	3,109	40	63
Punjab	3,694	3,900	6,040	9,940	1,400	36	38
Bihar and Orissa	3,310	3,961	..	3,961	1,134	28	34
Central Provinces	2,501	5,135	2,400	7,535	1,724	34	69
Assam	1,192	600	..	600	50	8	4
North-West Frontier Province	373	1,113	..	1,113	350	31	94
Total	27,186	58,983	16,140	75,123	13,227	22	48
Excluding Madras	22,809	35,568	12,440	48,008	10,546	30	46

APPENDIX B.

Particulars of wealth of communications on the basis of population and area in areas having a population density of 100 per sq. mile and over.

—	Area involved Square miles.	Average density of population per square mile.	Proportion of area more than 10 miles from any railway. Per cent.	LENGTH PER 100 SQ. MILES OF AREA.				AREA PER MILE OF				PERSONS PER MILE OF			
				Railways.	Metalled roads.	All motorable roads.	All roads publicly maintained.	Railways.	Metalled roads.	All motorable roads.	All roads publicly maintained.	Railways.	Metalled roads.	All motorable roads.	All roads publicly maintained.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
				Miles.	Miles.	Miles.	Miles.	Square miles.	Square miles.	Square miles.	Square miles.				
Madras	122,620	382	59	3·56	19·15	22·10	26·86	28·00	5·23	4·52	3·73	10,700	1,950	1,720	1,420
Bombay Presidency . .	77,035	284	54	3·25	12·20	17·40	23·00	30·80	8·20	5·74	4·35	8,740	2,325	1,690	1,235
Sind	21,670	118	32	3·68	0·23	0·23	39·00	27·00	108·40	108·40	2·56	3,450	55,350	55,350	327
Bengal	71,684	679	40	4·81	4·87	4·87	55·40	20·78	20·50	20·50	1·80	14,117	13,932	13,932	1,226
United Provinces . .	93,000	506	28	5·32	8·20	8·20	35·00	18·80	12·20	12·20	2·85	9,500	6,160	6,160	1,450
Punjab	73,000	290	26	4·52	5·05	12·12	29·10	22·00	19·80	8·33	3·42	6,400	5,800	2,400	1,000
Bihar and Orissa . .	83,161	453	39	4·00	3·76	3·76	39·40	25·12	21·00	21·00	2·54	11,400	9,500	9,500	1,150
Central Provinces . .	85,581	167	55	2·67	5·56	7·80	8·77	37·45	17·98	12·82	11·40	6,245	3,005	2,147	1,908
Assam	32,590	236	29	3·65	1·00	1·00	22·00	27·40	100·00	100·00	4·42	6,720	25,000	25,000	1,117
N.-W. F. P. . . .	7,231	265	39	3·20	8·07	11·60	22·00	31·30	12·40	8·60	4·50	8,270	3,290	2,280	1,200

APPENDIX C.

Expenditure on road construction and maintenance from revenue in Governors Provinces (except Burma and North-West Frontier Province).

Rs. lakhs.

Province.	1923-24.			1924-25.			1925-26.			1926-27.			1927-28.			1928-29.			1929-30.		
	Construction.	Maintenance.	Total.	Construction.	Maintenance.	Total.	Construction.	Maintenance.	Total.	Construction.	Maintenance.	Total.	Construction.	Maintenance.	Total.	Construction.	Maintenance.	Total.	Construction.	Maintenance.	Total.
Madras . .	15·2	74·3	89·5	17·4	79·6	97·0	28·0	87·7	115·7	22·9	83·8	106·7	46·3	95·9	142·2	45·8	104·9	150·7	53·7	111·3	165·0
Bombay . .	22·2	47·1	69·3	37·7	47·3	85·0	29·5	51·7	81·2	23·4	57·2	80·6	20·3	58·6	78·9	19·4	56·3	75·7	15·8	55·8	71·6
Bengal . .	15·2	48·0	63·2	15·7	47·7	63·4	21·9	50·0	71·9	18·4	47·8	66·2	16·5	51·6	68·1	13·8	50·3	64·1	9·5	49·3	58·8
United Provinces	10·4	50·0	60·4	11·5	55·7	67·2	11·0	56·8	67·8	14·1	59·0	73·1	7·7	59·5	67·2	6·6	58·8	65·4	11·9	53·9	65·8
Punjab . .	11·2	43·0	54·2	7·8	45·2	53·0	24·0	56·7	80·7	35·9	60·2	96·1	70·4	64·2	134·6	65·5	66·6	132·1	39·9	69·7	109·6
Bihar and Orissa	32·5	33·8	66·3	23·1	32·0	55·1	25·0	31·1	56·1	16·2	36·9	53·1	18·3	33·9	52·2	14·9	34·0	48·9	18·9	32·8	51·7
Central Provinces	13·2	27·0	40·2	13·2	27·8	41·0	16·0	32·0	48·0	21·9	37·3	59·2	29·7	39·8	69·5	25·3	34·7	60·0	15·6	34·7	50·3
Assam . .	3·0	21·5	24·5	3·6	21·2	24·8	4·7	22·0	26·7	6·8	23·3	30·1	9·8	25·5	35·3	11·2	23·2	34·4	9·5	27·2	36·7
TOTAL .	122·9	344·7	467·6	130·0	356·5	486·5	160·1	388·0	548·1	158·9	404·5	563·4	219·0	429·0	648·0	202·5	428·8	631·3	174·8	434·7	609·5

	Rs. Lakhs.
Average of 7 years expenditure on construction, *i.e.*, new roads and bridges and improvements to existing surfaces and miscellaneous improvements	167
Increase in maintenance expenditure 1923-24 to 1929-30	90

APPENDIX D.

Recommendations made by the Indian Roads and Transport Development Association Limited, for the future Development of Road and Rail Communications in India.

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- (c) Motor Vehicle Taxation—
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FOREWORD.

1. The Indian Roads and Transport Development Association since their formation in 1927 have never failed to emphasise the necessity for the development of roads and road transport if India is to maintain her commercial position in the World's markets.

2. In view of the present Road and Rail enquiry being carried out by Messrs. Mitchell and Kirkness for the Government of India whose recommendations will be considered at a Conference to be called in January 1933, the Council of the Indian Roads and Transport Development Association submit their recommendations for the future development and administration of road and rail communications in the country, which they hope will be considered at the above mentioned Conference.

EXTRACTS FROM ROAD DEVELOPMENT COMMITTEE REPORT, 1927-28.

3. The following extracts from the Report of the Indian Road Development Committee, 1927-28, confirm the necessity for Road Development in the Country:—

"The Desirability of developing the road system of India.

The evidence that we received was unanimous that the road system of India should be further developed and improved. Different witnesses stressed different points of view, but the point on which there was perhaps most general insistence was the need of better communications for marketing agricultural produce.

This aspect of the road question has also been considered recently by the Royal Commission on Agriculture in India. In paragraph 298 of its report the Commission says:—

> Good communications, in combination with efficient marketing arrangements, enable produce to be moved cheaply and quickly to places where the demand for it is active and secure the equalisation of prices for particular classes of produce throughout the country, and both these factors react favourably on the price which the average cultivator receives. They frequently open out to him alternative markets and the element of competition between market and market that follows usually operates greatly to the advantage of the producer. Defective communications between the point of production and local market hinder the movement of goods and make primary marketing costly, the additional charge ordinarily falling upon the shoulders of the cultivator. In extreme cases, difficulty of communications may leave the cultivator entirely at the mercy of the local dealer who alone has at his command enough pack or cart bullocks to undertake the transport of produce to the nearest market.

The Commission further points out that efficient communications exercise an immediate effect on the factor of time, which is an essential element in the price factor. Good communications in any area will often bring new crops within the range of profitable cultivation. In fact, it has been the improvement in communications since the middle of the nineteenth century that, more than any other factor, has brought about the change from subsistence farming to the growing of money crops, such as cotton, jute, groundnut and tobacco. The Commission also emphasises the point that bad communications, by imposing a constant strain on the health and stamina of the draught animals, seriously reduce their efficiency for the all-important work of cultivation. Finally, bad communications not only hamper the agriculturist in the marketing of his produce, but also raise the price of his own purchases from elsewhere. In short, the Commission concludes, the true income of the cultivator is largely dependent on the efficiency of communications.

The social and political effect of good communications, especially on the rural population, is not less important than the economic. It is unnecessary to elaborate this aspect of road development. It is commonplace that social and political progress is advanced by intercourse, and retarded by isolation. The far-reaching potentialities of motor transport are beginning to be realised. As one witness put it, "Good roads annihilate distances. Instead of counting by miles, we begin to count distance by time. Twenty to thirty miles is now an hour's distance". It is difficult to foresee, and difficult to exaggerate, the effect on the life of the nation of this annihilation of distance and the consequent awakening of the rural population.

It is admitted that certain lengths of railway, where a road runs parallel or on interior lines, have suffered from motor competition in the carriage of passengers. For instance, between Lahore and Amritsar, during the summer of 1927 third class passenger receipts fell by nearly 60 per cent. But it is considered that over long distances the railways can more than hold their own both for goods and passengers. *Over short distances whatever mode of transport is most economical or convenient should be available*, while motor competition tends to stimulate improvement in the railway services provided. The Railway administration would prefer that more attention should be paid to "radial" roads, which feed the railways, than to through roads which may compete with them. But here again it is recognised that through roads are the backbone of any coherent road system. The attitude of the railway administration is thus stated in the memorandum submitted to Committee by the Railway Board:—

> Generally speaking any scheme by which the development of the road system of India will receive an impetus, will be welcomed by the railway administration. *The benefits that may be expected from it pro-*

bably far outweigh the losses that may be suffered in some areas from the competition that will arise from road motor traffic.....
It is natural that in the replies received by the Committee from railways the latter should have expressed themselves as opposed to the construction of roads parallel to and running alongside the railway lines, but it must be recognised that a road system will have to be connected up and cannot be limited to roads more or less at right angles to railways. It is suggested, however, that there is large scope for many years to come in the development of roads which will feed the railways rather than compete with them, and that, even where roads are required parallel to the railways, they will open up the country better if built at some distance from the railways.

Our conclusion is that the *development of the road system of India is desirable.* It is especially desirable because it will make for the economic, social and political advancement of the rural population, on which the future of the nation so much depends."

BOARDS OF COMMUNICATIONS.

4. With the development of motor and air transport, it has become more than ever apparent that if the main arterial communications of the country, such as railways, roadways, waterways and airways are to develop in a healthy manner so that the country will have at its disposal the most economical means of transport—some Central Co-ordinating body is necessary.

5. The Association therefore recommend the appointment of a *Central Board of Communications*, which would be in the same relationship to the Central Government as the proposed Board of Communication to be established in each Province would be to the Provincial Governments. The Central Board should include and replace the existing Railway Board and should comprise in its number people with wide experience of the economics of transportation.

6. The functions of the Central Board of Communications would in addition to the foundations of the Railway Board, be:—

(*a*) The examination of all projects concerning the development of the "arterial" communications of the country, and their presentation to the Government of India, which under impeding constitutional changes should become Federal.

(*b*) The examination of all forms of the main transport system to assure their efficient operation and see that the public have at their disposal the most economical means of transport.

(*c*) The collection and dissemination of technical and other information, received from Provincial Boards of Communication which will further the country's communications.

(*d*) The disposal of the Petrol Tax Fund and submission of recommendations for its future application.

(*e*) The introduction of Standard Rules and Regulations for all motor transport throughout the country.

(*f*) Establish a uniform basis of taxation for motor transport in conjunction with Provincial Boards of Communication.

(*g*) Establish Standard Specifications for all forms of road development taking into consideration volume and type of traffic, also local conditions.

(*h*) Common basis of Road finance and development.

(*i*) Be responsible for the finance and development of the main arterial roads and important inter-Provincial roads relieving Provincial Governments of their financial responsibility.

PROVINCIAL BOARDS OF COMMUNICATIONS.

7. Each Provincial Government should have its Provincial Board of Communications, on which road, rail, agricultural and commercial interests should be represented and which will lead to the co-ordination of road and rail transport within the provinces in the first place and throughout the country by an exchange of views of the various Provinces through the Central Board of Communications.

8. Their functions would be:—

(*a*) To consider existing transport facilities with a view to ascertain if they are in accordance with the requirements of the Province and in this connection to prepare a survey showing:—

(1) High spots of agricultural, industrial and commercial development,

(2) Existing transport facilities,

(3) Places where it is estimated increased transport facilities will be called for in the near future.

The idea being to use this as a guide to transport requirements and an objective at which to aim.

(*b*) To prepare and forward to the Central Board of Communications a complete survey of the existing railway facilities covering Broad Gauge and Light Railways to show:—

(1) How far they serve the requirements of the Province,

(2) In what way or ways they do not serve the requirements of the Province,

(3) How they might be improved to facilitate agricultural and industrial development,

(4) In the case of certain Light Railways whether they should be scrapped in favour of motor transport in order to give the public better transport facilities and in this connection what steps should be taken to recompense the present owners of the Railways for any loss they may sustain in this connection.

(*c*) To consider how any particular form of transport is being penalised by unfair conditions, *e.g.*, the heavy taxation and heavy import duties on motor vehicles, and to make recommendations to the Provincial Government and Central Board of Communications for the betterment of these conditions.

(*d*) Establish an equitable and common basis of taxation of all road beneficiaries for road development and maintenance.

ROAD FINANCE.

9. It is urged that just as Railways have been developed by the necessary capital being provided in advance, other transport systems should be assisted in a similar manner and as the situation regarding road development calls for urgent attention, it is suggested that provision should be made for its finance by the issue of *Road Bonds* or by a *Road Loan.*

10. Road development is essential and is urgently needed if motor transport is to fulfil its object with the greatest economic advantage to the country, but funds are lacking at present and as a consequence instead of our road communications being improved to accommodate modern road transport, as feeders to our railways, they are falling into a state of disrepair. Paucity of revenue, however, is not a justifiable reason for the failure of our Governments to develop our roads, there are other means of finding the money when necessity demands, such as have been adopted with great success in other more advanced countries and that is by *capitalising some of the current revenues for the payment of interest and sinking fund on a Road Loan* or *by Road Bonds.*

11. A portion of the revenue which could be most conveniently utilised for this purpose, is the revenue derived from the excise tax and import duty on petrol. This petrol tax could therefore serve as a *guarantee* against any loans required for the development of those federal roads which would come under the Central Board of Communications and also those which would remain under Provincial control.

12. With the change of methods of transport it is necessary to change our basis of administration if we are to benefit from these new conditions, and such changes are, in the opinion of this Council, urgently necessary. If the masses are to enjoy the great advantages of motor transport and the country is to derive the benefits which would assuredly follow a financially sound well administered scheme of road and road transport development, then it should be co-ordinated with our railways, under a Central Board of Communications.

13. *Bridges.*—It is considered that bridges of importance should be built from capital and not revenue, so would be met from loans.

Financing a Road Scheme.

14. It is realised in most places in India that the roads must be improved so as to make them fit for present and future traffic, but great difficulties are experienced in arriving at a solution of the proper way or ways of effecting such improvements. Issues are confused as to what is improvement and what is development and then a discussion follows as to the proper method or methods of construction. Experiments are carried out haphazardly and considerations of details or the exact application thereof are mostly lost sight of. Lastly it is realised that the magnitude of the problem requires immense outlay and as money is not easily obtainable the whole question is dropped or at best shelved. The problem is thus made more complicated and every day we are drifting further away from the solution and meantime the roads are going from bad to worse. Perhaps the reason for this state of things is want of a definite plan of action and it is felt that if the solution of the problem is attempted from one fixed point instead of from several points, as at present, perhaps a quicker way may be discovered.

15. Now since any improvement or development fundamentally depends on finance it is best to make finance such a starting point and after having deduced the proper financial obligations that the State can legitimately carry the second stage will be the working of constructional details. The problem is thus broadly divided into two aspects (1) financial, and (2) engineering.

16. The very first consideration under finance is to assess the proper requirements in terms of the present amenities and the amenities desired and the second consideration is how these amenities are to be translated in terms of finance. For instance, if the only requirement is that the present roads do not stand up to traffic and have to be maintained at a heavy cost the substitution of a better or more lasting method means the sinking of capital, whose debt charges will be sufficiently low to compare with the present cost of maintenance. But if the requirement is that in addition to lasting longer the roads should be smooth so as to afford better riding facilities or that they should be dust-proof so as to permit of healthy travelling or again that they should be so attractive as actually help to increase traffic, then it will be necessary first to assess the value of such requirements. Improvement of a road so as to minimise or equalise the present maintenance is purely a matter of investment but developing a road so that it will have all the amenities of a modern thoroughfare is clearly something more than pure investment. Investment is only a money-lending proposition; all we want to assure is a good rate of interest after allowing for outgoings and a return of the capital and if road improvement was purely an investment it would not present great difficulties.

17. In the case of most City Roads, where traffic is abnormal and the present cost of maintenance stupendous, road improvement can undoubtedly

be looked upon as an investment and, in Bombay, for instance, it is found that high grade roads can be constructed by raising loans, so that even after allowing for interest, sinking fund, repairs and renewals during the currency of the loan, the outgoings are still less than the cost of maintaining a lower grade road.

18. The problem in the districts is however quite different. In many Provinces, the present allotments are insufficient even to provide for such travelling facilities as should be available with good roads. Any improvement in rural roads is actually a development, since it tends to increase traffic, creates a sense of travel, encourages a door-to-door sale of commodities, and brings better price for agricultural produce. It is impossible to translate these facilities into rupees and herein comes the greatest difficulty. A road improvement problem in the district, therefore, cannot and must not be considered as an investment. It is essentially an asset in the sense that the Capital sunk into a road must always be regarded as being there though never re-available for re-investment. The considerations applying to an investment are entirely different. All that is required is a provision for a good rate of interest and an ultimate return of the capital. Thus if the money is being invested in a building it is only necessary to provide for these two things, the outgoings forming part of the rent receivable. If the money is being invested in a road then again the procedure is similar, the difference being that instead of getting a return on the capital an equivalent amount on the road maintenance is saved. The real meaning of a road investment therefore is that all that is expected is a *lasting road instead of a frequently renewable one.* No amenities are provided for in an investment and so nobody is entitled to any. How then is one justified in treating as an investment improvements that are actually something more substantial than what a mere investment can give? The point is most important since the tendency to treat a road improvement as an investment will kill all improvements. It is not intended to suggest by this reasoning that any outlay is justified in improving a road. It must in all circumstances be absolutely the minimum that the conditions warrant. What is intended to bring out prominently is the fact that while the present maintenance can certainly be taken as a guide to work out the capital than can be economically spent on the road, considerations for additional amenities that such improvement will give must not be lost sight of.

19. The point however is how to assess the value of these amenities. These are returnable mostly in two ways, (1) as a property-tax on buildings when they come to be built on such improved road, and (2) as an increased revenue from wheel-tax on the vehicles plying on the road. Schemes are actually financed on these returns in America and in Japan the frontagers willingly pay for the dust proofing of even side streets. Public sense in India has not yet developed this far and rather than pay for a good road people will prefer to remain in dirty surroundings.

20. The problem is not therefore on all fours here but the object of mentioning these instances is to show how things will develop in course of time. In the beginning, however, the State must come to the rescue, and give the necessary money at a lower rate of interest. Where money is available and loans need not be raised such a course will result in giving a tremendous fillip to road improvement. Even when it is borrowed and a provision has to be made for a sinking fund, the money can be given at a nominal rate of interest, the difference between the actual rate of interest and such nominal rate being borne by the State. To take an example, if a loan is raised for improving a road purely as an investment, then the outgoings will be about 13 per cent. including interest, sinking fund and repair. Equalising these with the present cost of maintenance one is justified in investing on the road improvement only about eight times this amount. If, on the other hand, the improvement is treated as an asset and the State bears the cost of amenities in the shape of a lower rate of interest all one need provide for is say interest at 4 per cent. and repairs at 3 per cent., a total of say about 7 per cent. One is justified therefore in spending about

15 times the present maintenance on the roads, a difference of nearly 100 per cent.

21. The real implications of such a course will be clear if it is remembered that the life and maintenance of different methods of construction are not in simple proportion to the cost but that methods costing more last proportionately longer and require proportionately less maintenance than methods costing less. Therefore if the financing is so arranged that it is possible to go in for expensive methods the State stands relatively to gain in the shape of longer life and lower maintenance. Condition of traffic in India, further, make a recourse to such a course quite inevitable. If traffic on all roads were of one type it would be comparatively easy to classify the roads according to the number of vehicles these carry and then to lay down comparative periods of life for different methods of construction But the aspect entirely changes when one is faced with mixed traffic, *e.g.*, bullock carts and motor cars, the relative behaviour of each of which is fundamentally different from that of the other. If a method suited to one set of conditions is adopted it proves insufficient for the other and the method suited to the other becomes an unwarranted luxury for the former.

22. There is no alternative to raising funds but even then the scope of the improvement will be greatly restricted, if not actually hampered, if the improvement is looked upon as an investment. The selection of the actual method or methods to be laid to suit individual requirements of different classes of roads is a secondary matter that can be left to the Engineers to thrash out; what is most important is a decision about the principle of financing and if those responsible for this will first concentrate on it the rest seems to be fairly easy to work.

Motor Transport Taxation.

23. *Injustice of present taxation.*—The taxation of motor transport is higher in India than in any other part of the world. The excessive taxation through the diversity of taxes and lack of co-operation between the taxing authorities is strangling its development.

24. The Central Government for purposes of General Revenue impose import duties on motor vehicles and their accessories, also import duty and excise tax on petrol quite independent of the taxation in the form of registration fees, wheel-tax, tolls, permits and car stand fees imposed by the Provincial Governments, District Boards and Municipalities, who are inclined to look upon motor transport as the only legitimate source of taxation to meet the cost of maintenance of their roads.

25. The fact that the Central Government collects the bulk of the taxation on motor transport and is not responsible for the upkeep of our roads makes the injustice of the present basis of taxation all the more apparent.

26. A revision of the responsibility for our road system is urgently needed as recommended under Section 2 (*a*) headed Board of Communications, of this memorandum, by which Provincial Governments will be relieved of the financial responsibility of the main arterial roads. The Central Government should also allocate a larger percentage of revenue derived from the taxation of motor transport to the Provinces which will enable them to reduce the present excessive taxation.

27. *Committee to study taxation.*—This Association therefore recommends the appointment of a Committee to study the re-distribution of taxation on motor transport on an equitable basis between the Central and the Provincial Governments which will permit of a healthy development of this form of transport. Amongst others, the Committee should report on the following points:—

Firstly, Fix a limit on taxation of motor transport by Government of India for the purpose of General Revenue. For the present excessive import duties on motor vehicles, tyres and accessories cannot be claimed as being imposed for protective reasons, nor the exaggerated import duty and excise tax on petrol.

Secondly, Fix a basis of taxation by Central Government for the purpose of raising revenue for the construction and maintenance of those Federal roads, which should come under the control of the proposed Central Board of Communications, and which should be financed from a percentage of the present excise tax and import duty on petrol, together with grants from revenue derived from other beneficiaries—*i.e.*, income-tax, etc.

Thirdly, Consider whether the balance of the import duty and excise tax on petrol not allocated to the Central Board of Communications should be made available for the use of road development in the Provinces.

Light Railways and Branch Lines.

28. It is possible that the development of road transport in areas at present served by light railways or branch lines may, through the advantages offered by motor transport, have had the effect of depriving the railways of a certain percentage of their revenue and in consequence have prevented them from earning a reasonable commercial return on the capital invested.

29. Although this may be the case only where light railways run parallel to roads, it is suggested that enquiry should be instituted to see whether any such situation can be remedied without the public being deprived of the more economical means of transport and in the event of the circumstances being such that the elimination of the light railway is desirable, consideration should be given to some form of compensation being granted in lieu.

30. Compensation on the lines of a monopoly over the road being granted to the railway for a certain number of years, might be considered, on the understanding the railway service is discontinued and substituted by a modern service of motor transport.

Suggestions regarding Railway Administration.

31. The Council although primarily interested in the development of roads and road transport, are fully alive to the necessity of bringing up to date other forms of communications and have therefore included in this note the following points which may be of help to the Committee in their consideration of the whole subject. We trust therefore that the Committee will accept our remarks in the spirit in which they are offered:—

(*a*) That railways should follow more closely the policy adopted by all successful business organizations throughout the world, *viz.*, study their clients' requirements in whatever form, and provide means whereby close personal contact is maintained at all times.

(*b*) As railways have to all intents and purposes had a monopoly of rapid transport in the country, they have been inclined to expect their customers to come to them whilst it would appear to have seldom occurred to them that customers should be nursed and humoured in just the same way as customers for any other enterprise.

(*c*) No better example can be quoted of the wide gap which exists between the railway methods and those of business houses than the vexed question of dealing with complaints.

(*d*) Railway methods of handling complaints would incapacitate any business organization. Their failure to handle complaints expeditiously and treat each case on its merits has caused considerable dissatisfaction which in countries where roads are highly developed has resulted in loss of traffic which is going elsewhere.

(*e*) Business organizations on the contrary do their utmost to deal with complaints with despatch, realising that the public custom must be obtained if they are to function successfully in the face of modern competition.

(*f*) Where complaints have been handled expeditiously, business houses have found that liabilities have been turned into assets.

(*g*) The railway authorities should educate every individual employee to realise he has a definite function to perform in working for the goodwill of the public and increasing railway service at the same time.

(*h*) By such means can the railway organization become the live selling force it should be, and only in this manner can it be made capable of holding its own against competition without receiving undue preference or by being bolstered up at every turn.

APPENDIX E.

Extract from the Bombay Government Gazette, dated the 9th September 1932.

HOME DEPARTMENT.

Bombay Castle, 26th August 1932.

No. 8667/2-II.—The following draft of a notification which it is proposed to issue under section 11 of the Indian Motor Vehicles Act, 1914 (VII of 1914), is published as required by sub-section (1) of the said section, for the information of persons likely to be affected thereby, and notice is hereby given that the draft will be taken into consideration by the Governor in Council on the expiry of two months from the date of its publication in the Bombay Government Gazette.

2. Any objections or suggestions which may be sent to the Secretary to the Government of Bombay in the Home Department by any person with respect to the said draft before the expiry of the period aforesaid will be considered by the Governor in Council.

DRAFT NOTIFICATION.

In exercise of the powers conferred by section 11 of the Indian Motor Vehicles Act, 1914 (VIII of 1914), the Governor in Council is pleased further to amend the rules regulating the use of motor vehicles let or plying for hire in all districts in the Presidency proper outside the City of Bombay published in Government Notification in the Home Department No. 8623, dated the 10th February 1927, as follows, namely:—

After rule 45 of the said rules the following rule shall be inserted, namely:—

"45-A. (1) The District Superintendent of Police may direct by order in writing that no owner of any motor vehicle or class of motor vehicles shall permit a driver in his employ to be on duty during any period of 24 hours—

(*i*) for more than 8 hours excluding halts for a period exceeding one hour each, or

(*ii*) for more than 10 hours including all halts.

(2) The owner shall supply a driver with a trip book. The hours at which the driver begins and ends his duty and the periods of halts shall be entered in the trip book every day by the owner, his agent or representative. The trip book shall be carried on the motor vehicle and shall be open to inspection by any police officer."

APPENDIX F.

Taxation of Private Motor Cars.

Province.	Driving License fees.		Registration fee.			Provincial Government Taxation (Annual.)	Taxation by Municipalities.	Tolls.
	Original Fee.	Renewal.	Type of Vehicle.	Original.	Renewal.			
	Rs.	Rs.		Rs.	Rs.	Rs.		
Bombay . . .	20	5	Light . .	40	32	*Nil.*	Bombay City, varying from Rs. 60 to 160 per year according to unladen weights. Upcountry Municipalities generally charge rates varying from Rs. 12 to Rs. 36. (Thana and Bhiwandi Municipalities charge Rs. 48 and Ahmedabad Rs. 72).	Numerous. Varying from As. 4 to Re. 1 imposed at intervals of short distances, both by Government and Local Bodies.
			Heavy .	80	64			
Madras . . .	5	3	All Types .	16	*Nil.*	Weighing not more than 15 cwts. unladen . . . 70 Weighing between 15 and 30 cwts. . . . . 100 Weighing between 30 and 45 cwts. . . . . 130 Weighing between 45 and 60 cwts. 200	*Nil.*	*Nil.*
Bengal . . .	10	2	Light . .	16	*Nil.*	Measuring not more than 50 sq. ft. overall . . 40 Measuring between 50 and 80 sq. ft. overall . . 50 Measuring 80 sq. ft. overall and above . . . 70	*Nil.*	*Nil.*
			Heavy .	32	*Nil.*			
			(Area to be measured by wheel base × track).					
Bihar and Orissa .	5	2	*Vide* next column			Seating not more than one person . . . . 15 Seating not more than 3 persons . . . . 30 Seating not more than 7 persons . . . . 50 For every additional passenger above 7, extra . . 20	*Nil.*	*Nil.*
							Nil.	*Nil.*
United Provinces .	5	2	Light . .	30	*Nil.*	*Nil.*	General rate between Rs. 24 and Rs. 54.	*Nil.*
			Heavy .	60	,,			
Central Provinces .	10	2	*Vide* next column.			Not exceeding 15 cwts. in weight unladen . . 15 Between 15 cwts. and 1½ tons . . . . 25 Between 1½ and 2 tons . 35 Between 2 and 3 tons. . 100	Varying from Rs. 12 to Rs. 20.	*Nil.*
Punjab . . .	3	2	Light . .	16	*Nil.*	Seating not more than 1 person . . . . 40 Seating not more than 3 persons . . . . 60 Seating not more than 4 persons . . . . 80 For every additional person 20	Rs. 36 generally, and Rs. 18 in Jhelum. Some Municipalities do not impose.	
			Heavy .	32	,,			
Assam . . .	5	2	Light . .	16	*Nil.*	*Nil.*	* Rs. 10, 24, 30 and 60 in different Municipalities.	On 2 bridges only.
			Heavy .	32	,,			

* In Assam, in addition to Municipalities, the District Boards impose taxation on private cars, varying from Rs. 10 to Rs. 30. District Boards do not tax private cars in any other province.

APPENDIX G.

Motor Vehicle Taxation in the various Provinces.

Motor Buses.

Provinces.	Driving Licenses.		Registration Fees.		Inspection Fee (Annual).	Public Conveyance.			
						Driver's Permit.		Owner's Permit.	
	Original.	Renewal.	First Year.	Renewal.		Original.	Renewal.	Original.	Renewal.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bombay . .	20	5	Light . 40 Heavy . 80	32 64	*Nil.*	8	5	5	2-8
Madras . .	5	3	16	3	50	16	8	..	..
Bengal . .	10	4	16	8	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*

Provincial Taxation (Annual).	Municipal Taxation.	District Board Fees.	Car Stand Fees.	Local Tolls.
Nil.	*Bombay City*— Rs. Weighing up to 10 cwts. unladen . . 60 Weighing up to 20 cwts. unladen . . 80 Weighing up to 30 cwts. unladen . . 100 Weighing up to 40 cwts. unladen . . 120 Weighing over 40 cwts. . 160 *Upcountry towns* charge rates varying from Rs. 12 to Rs. 200; in the majority of Municipalities it is not over Rs. 60.	*Nil.*	*Nil.*	Numerous. General rate is Re. 1 per bus every day (and on lorries Re. 1 per trip).
Conveying not more than 4 persons . . Pneumatic tyred. Rs. 160; Other vehicles. Rs. 240 Conveying more than 4 persons—for every person which the vehicle is licensed to carry . Pneumatic tyred. Rs. 40; Other vehicles. Rs. 60	*Nil.*	Taxes collected by District Boards as license fees on buses differ in the various Districts, but Rs. 1,100 per annum per bus represents the average figure on a 30-cwt. bus.	*Nil.*	*Nil.*
(*a*) Seating not more than 8 persons . 75 (*b*) Seating between 8 and 30 persons, in addition to the above, a tax for every person that can be seated over 8, of . . 3 (*c*) Seating more than 30 persons, in addition to the tax payable under (*a*) and (*b*), for every additional person that can be seated, of . . 2 For vehicles not fitted entirely with pneumatic tyres, the rates are Rs. 100, Rs. 4 and Rs. 4, against (*a*), (*b*) and (*c*) respectively.	*Nil.*	*Nil.*	*Nil.*	*Nil.*

APPENDIX G—*contd.*

Provinces.	Driving Licenses.		Registration Fees.		Inspection Fee (Annual).	Public Conveyance.				Provincial Taxation (Annual).	Municipal Taxation.	District Board Fees.	Car Stand Fees.	Local Tolls.
						Driver's Permit.		Owner's Permit.						
	Original.	Renewal.	First Year.	Renewal.		Original.	Renewal.	Original.	Renewal.					
	Rs.	Rs.	Rs.	Rs.						Pneumatic tyred. Rs. / Other vehicles. Rs.				
Bihar & Orissa .	5	2	*See* Provincial tax		Seating not more than 7 persons, Rs. 10. Seating not more than 22 persons, Rs. 20. Seating more than 22 persons, Rs. 25.	*Nil.*	*Nil.*	*Nil.*	*Nil.*	Seating not more than 7 . . 130 / 170 Seating not more than 9 . . 206 / 250 For every additional person that can be seated up to 19, in addition . 12 / 15 Seating more than 19 persons; for every additional person that can thus be seated, up to 22, in addition . . 16 / 20 Seating more than 22 persons; for every additional person that can thus be seated up to 26, in addition . . 26 / 32	*Nil.*	*Nil.*	*Nil.*	*Nil.*
United Provinces	10	5	Light . 30 Heavy . 60	30 60	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	Maximum Rs. 200, minimum Rs. 24, Rs. 60 to 100 is the general rate. 1 Municipality charges Rs. 20 per seat. Some Municipalities do not impose any tax at all.	In some cases District Boards have imposed a Property Tax of 3 or 4 pies in the Rupee on income of over Rs. 1,000. Some District Boards charge As. 8 to Rs. 3 per mile of bus route monthly, while a few others charge Rs. 10 to Rs. 100 on a different basis. More than 50 per cent. of the Boards charge nothing.	*Nil.*	Not in force except in 2 or 3 Municipalities.
Central Provinces	4	2	*Nil.*	*Nil.*	Rs. 12 (Rs. 3 quarterly).	*Nil.*	*Nil.*	*Nil.*	*Nil.*	Seating capacity not exceeding 10 . . 80 Seating capacity between 11 and 15 . 140 Seating capacity between 16 and 20 . 160 Seating capacity between 21 and 25 . 200 Thereafter for each additional seat . 50 (A surcharge of 50 per cent. is payable on vehicles fitted with solid or semi-solid tyres.)	Rs. Maximum . 50 Minimum . 10 (Rs. 25 to 50 generally on 30-cwt. bus.)	*Nil.*	*Nil.*	*Nil.*

APPENDIX G—*concld.*

Provinces.	Driving Licenses.		Registration Fees.		Inspection fee (Annual).	Public Conveyance.			
						Driver's Permit.		Owner's Permit.	
	Original.	Renewal.	1st year.	Renewal.		Original.	Renewal	Original.	Renewal.
	Rs.	Rs.	Rs.	Rs.	Rs.				
Punjab . .	8		*Light* with pneumatic tyres 40	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*
			Without Pneumatic tyres 95	25					
			Heavy vehicles, all 95	62-8					
				62-8					
Assam * . .	5	2	Light . 16	*Nil.*	Light . 10	*Nil.*	*Nil.*	*Nil.*	*Nil.*
			Heavy . 32		Heavy . 20				

Provincial Taxation (Annual).	Municipal Taxation.	District Board Fees.	Car Stand Fees.	Local Tolls.
Rs.				
If running exclusively within limits of a Municipality or Cantonment—				
Seating not more than six persons . . 75	Varying from Rs. 36 to Rs. 96. Many Municipalities do not tax.	*Nil* except Car Stand Fees levied by some Boards as shown in next column.	Basis of charge varies. A few examples are 6 pies per stoppage; 1 anna per rupee of fare, As. 8 per day; Rs. 1 to 2 monthly. These are charged both by Municipalities and District Boards, but not by all of them.	*Nil.*
For each additional seat up to 32, in addition . . . 6	In case of vehicles paying both Municipal and Provincial Taxation, the latter will be reduced to the extent of 50 per cent. of the former.			
Seating more than 32 . 700				
If not running exclusively within Municipality or Cantonment—				
Seating up to 20 persons . . . 50				
For each additional seat over 20, up to 32, in addition . . 6				
Seating more than 32 . 700				
Nil.	Maximum authorised by Government Rs. 100 per year. Actual levy Rs. 36 to Rs. 75.	Maximum authorised by Government Rs. 100 per year. Actual levy varying from Rs. 24 to Rs. 100.	*Nil.*	*Nil.*

*On certain special roads fees varying from Rs. 50 to Rs. 2,500 are charged for permits.

APPENDIX H.

Approximate calculation of number of motor vehicles in India.

Cars and cycles written off ¼ in 5th, ½ in 6th, and ¼ in 7th years.
Lorries and buses written off ¼ in 3rd, ½ in 4th, and ¼ in 5th years.

Opening balances, Wastage and imports.	Number of			Total.
	Cars.	Cycles.	Buses and Lorries.	
At end 1923-24 . . .	32,740	8,832	5,884	47,456
Imports 1924-25 . . .	9,380	1,456	2,162	
Wastage 1924-25 . . .	9,541	2,644	1,920	
End 1924-25 . . .	32,579	7,644	6,126	46,349
Imports 1925-26 . . .	12,757	1,629	4,840	
Wastage 1925-26 . . .	12,820	3,461	1,507	
End 1925-26 . . .	32,526	6,812	9,459	48,797
Imports 1926-27 . . .	13,197	1,803	6,343	
Wastage 1926-27 . . .	10,921	3,353	646	
End 1926-27 . . .	34,802	5,262	14,156	54,220
Imports 1927-28 . . .	15,122	2,146	8,682	
Wastage 1927-28 . . .	6,387	1,878	1,182	
End 1927-28 . . .	43,537	5,530	21,656	70,723
Imports 1928-29 . . .	19,567	1,802	12,790	
Wastage 1928-29 . . .	4,882	912	2,813	
End 1928-29 . .	58,222	6,420	31,633	96,275
Imports 1929-30 . . .	17,399	1,956	15,306	
Wastage 1929-30 . . .	7,417	1,172	4,547	
End 1929-30 . . .	68,204	7,204	42,492	117,900
Imports 1930-31 . . .	12,595	1,506	8,913	
Wastage 1930-31 . . .	10,875	1,430	6,552	
End 1930-31 . . .	69,924	7,274	44,853	122,051
Imports 1931-32 . . .	7,220	..	4,302	
Wastage on above formula 1931-32	17,752	..	13,072	
Net decrease . . .	8,532	..	8,770	
End 1931-32 . . .	61,392	..	36,083	

The abnormal depression of the last two years has doubtless caused less use and wear and tear and thus prolongation of life of vehicles. Further lack of ready money to purchase new vehicles has been a further deterrent to the " scrapping " of old. We do not therefore believe that there was any substantial decrease in total vehicles in use in 1931-32 and we assume the same figure approximately as in 1930-31. This assumption is supported by the fact that petrol consumption in 1931 was only 1½ per cent. below that of 1930, and we assume that in 1931-32 there were on the road in all-India and Burma, 70,000 cars (and *taxis*) 45,000 buses and 7,500 motor cycles.

APPENDIX I.

Analysis of cost of operating motor buses under varying conditions showing tax element.

FIRST CASE. CHEAP BUS 30 CWT. OPERATED BY SMALL OWNER WITH NO OVERHEAD.

1. *Initial outlay—*

	Chassis less tyres.	Tyres.
	Rs.	Rs.
Invoice price at port less body . .	1,850	300
Trade profit including all incidental charges	400	60
Body	500	...
Retail price at port less duty . .	2,750	360
Add duty 25 per cent. on invoice . .	462·8	75
Total retail price at main port . .	3,647·8	
	say 3,650	
Add freight upcountry	say 150	
Retail price at *e.g.*, Delhi or Nagpur .	3,800	

2. *Running expenses.*—Assume three cases, bus runs 15,000, 20,000 or 30,000 miles per year.

Vehicles depreciated on a total of 60,000 miles.

Tyres on 10,000 miles per set.

Depreciation Provision.	Total. At Port.	Total. Up-country.	Tax element.
15,000 miles per year 3,212·5÷4 . .	803	840	115
20,000 miles per year 3,212·5÷3 . .	1,071	1,121	154
30,000 miles per year 3,212·5÷2 . .	1,606	1,681	231

Assumed vehicle travels 17 miles per gallon of petrol which costs at—

	Rs. A. P.
Madras	1 5 6
Nagpur	1 10 0
Delhi	1 11 6 per gallon.

Analysis of cost of operating inexpensive 30 cwt. motor bus, showing tax element, on the basis of 15,000, 20,000 or 30,000 miles per year.

	Madras.		Central Provinces.		Hypothetical case Petrol expensive. No provincial or local tax.	
	Amount.	Tax element.	Amount.	Tax element.	Amount.	Tax element.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
A.—Fixed yearly charges.						
Insurance . . .	268	..	268	..	268	..
Wages or earnings of driver and cleaner Rs. 50 and Rs. 15 per mensem.	780	..	780	..	780	..
Rent Rs. 5 per mensem.	60	..	60	..	60	..
Provincial tax . .	500	500	160	160	..	..
Local tax . . .	1,000	1,000	30	30	..	..
Miscellaneous taxes .	66	66	12	12	..	..
Interest 12 per cent. on half investment .	220	..	220	..	220	..
Total fixed annual charges.	2,894	1,566	1,530	202	1,328	..
B.—Depreciation of vehicles—15,000 miles per annum . .	803	115	840	115	840	115
C.—Running charges.						
Petrol 15,000 miles at 17 miles per gallon—882 gallon . .	1,185	550	1,435	550	1,515	550
Tyres 1½ sets . .	653	113	653	113	653	113
Oil and grease . .	100	10	100	10	100	10
Repairs . . .	200	..	200	..	200	..
Spare parts . .	100	15	100	15	100	15
Total running charges.	2,238	688	2,488	688	2,568	688.
Total all ch arges .	5,935	2,367	4,858	1,005	4,736	803

Analysis of cost of operating inexperience 30 cwt. motor bus, showing tax element, on the basis of 15,000, 20,000 or 30,000 miles per year—contd.

	Madras.		Central Provinces.		Hypothetical case Petrol expensive. No provincial or local tax.	
	Amount.	Tax element.	Amount.	Tax element.	Amount.	Tax element.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Tax element represents per cent. round.	..	40	..	21	..	17
Cost per mile . As.	6·32	2·53	5·18	1·07	5·06	0·86
If the yearly milage is 20,000 the cost works out per mile As.	5·43	2·08	4·70	1·04	4·63	0·88
Tax per cent. . .	..	38	..	22	..	19
And if 30,000 to . As.	4·75	1·67	4·32	0·98	4·28	0·87
Tax per cent. . .	..	35	..	23	..	20

SECOND CASE. OPERATION OF A FLEET OF BUSES BY A LARGE CONCERN.

NOTE.—The tax element cannot be readily separated as the figures are based on total cost of operating in several administrations, an attempt is, however, made to separate this approximately.

Analysis of operating a large fleet of 20-seater buses with careful control, issue of tickets and travelling inspection staff.

	Annas per vehicle mile.	
	Total.	Tax element.
Petrol	1·89	0·72
Lubricants	0·14	0·02
Tyres	0·56	0·08
Sundries	0·07	...
Repairs	0·42	...
Salaries	1·89	...
Contingencies, including provincial and local taxation	0·91	0·20
Depreciation	0·65	0·06
Miscellaneous	0·10	...
As. .	6·63	1·08

or 6 annas 10 pies = 16 per cent.

APPENDIX J.

Commercial vehicle taxation and the road bill in certain Provinces.

Assuming that in present circumstances the average rural motor bus travels 15,000 miles per year and consumes petrol at the rate of 17 miles per gallon; that it has a total life of 60,000 miles, or four years; and uses up a set of tyres every 10,000 miles; the element of central taxation in the annual cost of operation will be seen from the previous analysis to be:—

	Rs.
Tax on vehicle at import Rs. 462-8-0 spread over 4 years per year	115
Petrol consumed 15,000÷17 at As. 10 . . .	550
Oil and grease, duty on	10
Tyres 1½ sets, duty on 1 set Rs. 75	110
Spare parts, duty on	15
	800

Applying this and the current rates of Provincial and local taxation to the number of such vehicles at present in use, the total taxation being paid in various Provinces is as follows:—

Madras—

	Taxation Rs.			
Central.	Provincial.	Local.	Miscellaneous.	Total.
800	500	1,000 (average)	66	2,366

Rs. 2,366 × 4,170 vehicles = Rs. 98·80 lakhs.

The road bill at present is:—

Construction.	Maintenance.	Total.
Rs. Lakhs.	Rs. Lakhs.	Rs. Lakhs.
104·79	126·66	231·45

and the increase in the maintenance bill since 1925-26 (before buses were a serious factor) has been—

	Rs. Lakhs.
1930-31	126·66
1925-26	87·70
	38·96

Bombay—

	Taxation Rs.			
Central.	Provincial.	Local.	Miscellaneous.	Total.
800	—	60*	340†	1,200

Rs. 1,200 × 4,750 vehicles = Rs. 57·00 lakhs.

* Rs. 120 in Bombay varies upcountry. Rs. 60 assumed as average.

† Rs. 300 tolls, 32 registration renewals, 7/8 drivers and owners permit.

The road bill at present is:—

	Construction.	Maintenance. (Rs. Lakhs.)	Total.
Presidency only . .	11·89	46·66	58·56

and the increase of maintenance expenditure has been (in Bombay and Sind as Sind figure cannot be separated now for 1925-26)—

	Rs. Lakhs.
1930-31	53·00
1925-26	51·70
	1·30

Bengal—

Taxation Rs.

Central.	Provincial.	Local.	Miscellaneous.	Total.
800	111	—	8	919

Rs. 919 × 1,700 buses = Rs. 15·61 lakhs.

The road bill at present is:—

	Construction.	Maintenance. (Rs. Lakhs.)	Total.
1929-30	9·5	49·3	58·8

and the *decrease* in maintenance charges since 1925-26 has been—

	Rs. Lakhs.
1929-30	49·3
1925-26	50·0
	0·7

United Provinces—

Taxation Rs.

Central.	Provincial.	Local.	Miscellaneous.	Total.
800	--	100	30	930

(a provincial tax is now to be imposed).

Rs. 930 × 4,500 buses = Rs. 41·87 lakhs.

The road bill at present is:—

	Construction.		Maintenance.	Total from revenue.
	Capital.	Revenue.	(Rs. Lakhs.)	
1930-31	19·43	8·29	55·77	64·06

and the *decrease* in maintenance cost since 1925-26 has been—

	Rs. lakhs.
1930-31	55·77
1925-26	56·80
	1·03

Punjab—

Taxation Rs.				
Central.	Provincial.	Local.	Miscellaneous.	Total.
800	50	36	50*	936

Rs. $936 \times 3{,}030 =$ Rs. 28·35 lakhs.

The road bill at present is:—

	Construction.	Maintenance. (Rs. Lakhs.)	Total.
1929-30	28·85	69·69	98·54

and the increase in road maintenance bill from 1925-26—

	Rs. lakhs.
1929-30	69·69
1925-26	56·70
	13·00

Bihar and Orissa—

Taxation Rs.				
Central.	Provincial.	Local.	Miscellaneous.	Total.
800	342	..	20	1,162

Rs. $1{,}162 \times 790 =$ Rs. 9·16 lakhs.

Road Bill.	Original works.	Maintenance. (Rs. Lakhs.)	Total.
1929-30 . . .	18·90	32·8	51·70

Increase in maintenance bill since 1925-26—

	Rs. lakhs.
1929-30	32·80
1925-26	31·10
	1·70

Central Provinces—

Taxation Rs.				
Central.	Provincial.	Local.	Miscellaneous.	Total.
800	160	30	12	1,002

Rs. $1{,}002 \times 1{,}200 =$ Rs. 12·02 lakhs.

Road Bill.	Construction.		Maintenance.	Total Revenue.
	Capital.	Revenue.		
1930-31 .	10·31	10·35	34·09	44·44

Increase in maintenance bill since 1925-26—

	Rs. lakhs.
1930-31	34·09
1925-26	32·00
	2·09

* Rs. 25 Registration renewal, Rs. 25 Cart stand charges average.

Assam and North-West Frontier Province.—Omitted. In the former a lot of transport operates on monopoly for which it pays heavily and full particulars are not available for the latter.

Summary.

—	Taxes paid by rural buses and lorries.	Road Bill.				
		Construction.		Maintenance.	Total Revenue.	Increase in maintenance bill since 1925-26.
		Capital.	Revenue.			
Madras . . .	98·80	..	104·79*	126·66	231·45	38·96
Bombay . . .	57·00	..	11·89†	46·66	58·55	1·30
Bengal . . .	15·61	..	9·50‡	49·30	58·80	—0·70
United Provinces . .	41·87	19·43	8·29*	55·77	64·06	—1·03
Punjab . . .	28·35	..	28·85‡	69·69	98·54	13·00
Bihar and Orissa . .	9·16	..	18·90‡	32·80	51·70	1·70
Central Provinces . .	12·02	10·31	10·35*	34·09	44·44	2·09
	262·75	29·74	192·57	414·97	607·54	55·32

* 1930-31.

† Estimated 1930-31.

‡ 1929-30.

APPENDIX K.

Note showing how the railway figures used in the diagram facing page 46 are arrived at.

1. *Obligations of railways as regards their track.*—The railways of India have to meet from their revenues annually the following:—

(*a*) Working expenses which include general administration, repairs, maintenance and operation.

(*b*) Appropriation to Depreciation Fund.

(*c*) Interest on capital at charge.

(*d*) A contribution of 1 per cent. on the capital at charge to general revenues.

For the year 1930-31* the amounts involved were as follows:—

	Rs. Crores.
(*a*) Working expenses	54·39
(*b*) Appropriation to Depreciation Fund . .	13·07
(*c*) Interest on capital at charge	32·72
(*d*) Contribution of 1 per cent. on the capital at charge to general revenue	5·74
Total .	105·92

2. *Maintenance of track.*—The first item to be considered in connection with the above is that portion of working expenses spent on the maintenance of track. The heading to which these expenses are assigned is styled "Maintenance of structural works", and the total figure for all railways in India under the heading for the year 1930-31 is 15·5 crores. But as this figure includes not only permanent way but buildings as well, it will be necessary to extract from it the proportion representing the cost of maintenance of track, bridges, etc., as distinct from other structures on the railway. In order to arrive at a reasonable proportion we have taken the East Indian Railway as typical. We find in the capital and revenue accounts of this railway that about 59 per cent. of the total cost of maintaining structural works represents money devoted to the upkeep of bridges and track, and if we take 59 per cent. of 15·95 we get 9·42 crores which we think reasonably represents the cost of maintaining the track and bridges of all railways in India.

3. *Depreciation Fund.*—Money from earnings must of course be set aside by all forms of transport to meet the cost of depreciation, but the amount so set aside by railways to meet the cost of depreciation of track and bridges is peculiar to the railway. The total amount set aside by railways to depreciation account in 1930-31 was 13·07 crores, but this figure includes depreciation on rolling stock and buildings as well as on permanent way and bridges, and some estimate must be made of the amount set aside for permanent way and bridges only.

Out of the total sum set aside for depreciation by the East Indian Railway during 1930-31, we find that 40·25 per cent. represented depreciation of

* Figures in regard to railways in this chapter are taken from the Railway Administration Report and East Indian Railway Capital and Revenue Accounts, 1930-31.

track and bridges and we therefore think that 40·25 per cent. of 13·07 crores or 5·26 crores might represent the total sums placed by all railways in the depreciation account for track and bridges.

4. *Interest on capital at charge.*—In order to obtain interest on capital at charge set aside for permanent way and bridges annually we proceeded on the same lines. To arrive at the interest paid on capital invested in permanent way and bridges on all railways in India we have assumed that the capital at charge on account of the permanent way and bridges on all railways bears the same ratio to the total capital at charge, as the capital at charge on account of the permanent way and bridges on the East Indian Railway bears to the total capital at charge on that railway. We find that about 44·25 per cent. of the capital at charge on the East Indian Railway is on account of permanent way and bridges, etc., and if the proportion is about the same on all railways, some Rs. 14·5 crores out of a total of Rs. 32·72 crores paid as interest on capital for the year 1930-31 would be on account of permanent way and bridges for all railways.

5. *Railway contribution to general revenues.*—Under the resolution adopted by the Legislative Assembly on September 28th, 1924, separating railway from general finances, it was decided that railways should pay 1 per cent. of the capital at charge to the general revenues and that, if during any years, railway revenues were insufficient to meet this obligation, the deficiency must be made good in subsequent years. For the year 1930-31, 5·70 crores was the contribution on this account.

6. *Taxes.*—Included in the working expenses is a small element on account of taxes, which include two items:—

(*a*) taxes paid to local bodies and Municipalities,

(*b*) customs duties.

The former during 1930-31 amounted to 28 lakhs and the latter to 19 lakhs, but in regard to the last item, it must not be overlooked that some important railway requirements (as for instance steel rails—a considerable item) are purchased in the country where they are manufactured under a protective duty, and the difference between the prices that would be paid in the open market and the prices actually paid by railways for the Indian product must represent a considerable burden on railways.* In view of this we consider that direct taxation borne by railways may reasonably be placed at about half a crore.

7. *Assemblage of the above figures.*—It would appear from the above that the following may be set down as obligations paid by railways on account of track, contribution to the general revenues and taxes:—

1930-31.	Rs. Crores.
(*a*) Maintenance of permanent way and bridges .	9·42
(*b*) Appropriation to Depreciation Fund on account of permanent way and bridges . . .	5·26
(*c*) Interest on capital at charge on account of permanent way and bridges	14·5
(*d*) Contribution of 1 per cent. of capital at charge to general revenues	5·74
(*e*) Taxes	·5
Total .	35·40

* In 1930-31, 90,000 tons were purchased in the country for Indian Railways. The duty on these would have been 90,000 × Rs. 13 per ton, or Rs. 11·70 lakhs.

We have stated in para. 1 above that the total obligations of railways during the year 1930-31 amounted to 105·92 crores, and it is necessary to find what percentage to this total the various figures given above bear. They work out as follows:—

	Per cent.
(*a*) Maintenance of permanent way and bridges .	8·9
(*b*) Appropriation to Depreciation Fund on account of permanent way and bridges	4·97
(*c*) Interest on capital at charge on account of permanent way and bridges	13·7
(*d*) Contribution of 1 per cent. of capital at charge to general revenues	5·42
(*e*) Taxes	·47
Total .	33·4

APPENDIX L.

(See Chapter VI.)

Railway.	Projects which could probably be abandoned in favour of good roads. 1				Projects which probably cannot be justified owing to existence of good roads. 2				Projects probably justified by traffic offering, especially heavy merchandise even where good roads exist. 3				Projects required urgently as through connections. 4				Projects which may be required as through connections. 5				Projects which can probably be abandoned for various reasons. 6			
	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge	Miles.	No.	Name.	Gauge.	Miles.
1. MADRAS.																								
Madras and Southern Mahratta (Madras, Chapter V, para. 32).	1	Yerragudipad Nandyal.	M	72													1	Cumbum-Kalahasti-Madras.	M	238	1	Rajahmundry-Sironcha.	5′ 6″	209
	2	Ollapallem-Singarayakonda-Kanigiri.	M	47													2	Madras-Renigunta .	M	78				
	3	Kavali-Udayagiri .	2′ 6″	52																				
	4	Nellore-Kanigiri .	5′ 6″	93																				
South Indian (Madras, Chapter V, para. 33).	5	Palamcottah-Panakkudi.	M	31	1	Karaikkudi-Devakottai.	M	9	1	Pollachi-Vennanthurai.	M	15					3	Arantangi-Karaikkudi.	M	16	2	Satyamangalam-Mettupalayam.	5′ 6″	29
	6	Ariyalur-Jayankonda-Cholapuram.	M	30	2	Theni-Periyakulam .	M	9	2	Bodinayakkanur-Gudalur.	M	28					4	Manamadurai-Maniyachi-Tuticorin.	M	69	3	Kollengode-Trichur.	M	40
					3	Salem-Trichinopoly .	M	85	3	Karaikkudi-Madura-Palni.	M	51					5	Satyamangalam-Hardanahali.	M	45	4	Mangalore-Udipi .	5′ 6″	40
					4	Virudhunagar-Arrappukkotai.	M	12	4	Tiruppur-* Satyamangalam.	M	94												
					5	Cuddalore-Pondicherry.	2′	15	5	Tanjore-Pattukkotai.	M	28												
					6	Peravur-Makur .	M	20																	
2. BOMBAY.																								
Great Indian Peninsula (Bombay, Chapter V, para. 38).					7	Belapur-Shegaon .	5′ 6″	45	6	Baramati-Baura .	2′ 6″	42					6	Diva-Dasgaon (as alternative to Madras and Southern Mahratta. Karad-Chiplun-Ulva No. 7 below).	5′ 6″	93				
Bombay, Baroda and Central India (Bombay, Chapter V, para. 36).	7	Thasra-Virpur .	2′ 6″	33½	8	Modasa-Dungarpur .	M	45																
	8	Nandurbar-Kheti .	2′ 6″ or 5′ 6″	29½	9	Bulsar-Dharampur .	5′ 6″	17																
Madras and Southern Mahratta (Bombay, Chapter V, para. 36-A).	9	Raibag-Bagalkot .	M	76	10	Koregaon-Satara .	M	12					1	Hubli-Saundatti-Belgaum.	M	80	7	Karad-Chiplun-Ulva (as alternative to Great Indian Peninsula Diva-Dasgaon No. 6 above).						
	10	Raibag-Niphani .	M	32																				
	11	Bagalkot-Ilkal .	M	37																				
	12	Bijapur-Talikote .	M	60																				
	13	Dundur-Nargund .	M	21																				
	14	Haveri-Havanur .	M	20																				
	15	Athni-Shedbal .	M	..																				
	16	Hubli-Sirsi . .	M	68																				

* *See* page 21 of the Madras report in regard to this project.

APPENDIX L—*contd.*

Railway.	Projects which could probably be abandoned in favour of good roads. 1				Projects which probably cannot be justified owing to existence of good roads. 2				Projects probably justified by traffic offering, especially heavy merchandise even where good roads exist. 3				Projects required urgently as through connections. 4				Projects which may be required as through connections. 5				Projects which can probably be abandoned for various reasons. 6			
	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.
3. BENGAL.																								
East Indian Railway (Bengal, Chapter VI, para. 38).					11	Contai Road-Contai .	5′ 6″	34									8*	Champadanga-Tarakeshwar.	2′ 0″	4½				
Bengal-Nagpur Railway (Bengal, Chapter VI, para. 39).					12	Chandrakona-Ghatal	5′ 6″	25									9	Vishnupur-Santragachi Chord.	5′ 6″	76				
Bengal Dooars (Bengal, Chapter VI, para. 40).									7	Madiri-Hat-Gitaldha	M	60												
Assam Bengal (Bengal, Chapter VI, para. 41).	17	Sararchar-Hossainpur	M						8	Jharia-Bagmara-Siju	M	45					10	Dohazari-Akyab .	M	182				
	18	Atharabari-Hossainpur.	M						9	Rajapur-Ramchandrapur.	M	22					11	Gouripur-Gauhati .	M	264				
	19	Kishoreganj-Hossainpur.	M						10	Narsingdi-Aralia .	M	24½												
	20	Atharabari-Goghbazar.	M						11	Noyapara-Chatalpara.	M	20												
	21	Kishoreganj-Karimganj.	M																					
	22	Sararchar-Rasitpur .	M																					
Eastern Bengal (Bengal, Chapter VI, para. 42).	23	Behrampore-Halsa .	5′ 6″	103									2	Dacca-Aricha .	5′ 6″	64								
	24	Ishurdi-Pabna-Bera	5′ 6″	48																				
	25	Krishnagar-Jellingee	5′ 6″	56																				
	26	Faridpur-Barisal .	5′ 6″	81																				
	27	Jamalpur-Tangail .	5′ 6″	47																				
	28	Singia-Bhatiapara .	5′ 6″	18																				
	29	Bogra-Nowkhila-Serajganj-Kajipur.	M	42																				
	30	Ruhea-Titulia .	M	21																				

* The East Indian Railway subsequently informed us that this project might perhaps be replaced by a good metalled road.

APPENDIX L—*contd.*

Railway.	Projects which could probably be abandoned in favour of good roads. 1				Projects which probably cannot be justified owing to existence of good roads. 2				Projects probably justified by traffic offering, especially heavy merchandise even where good roads exist. 3				Projects required urgently as through connections. 4				Projects which may be required as through connections. 5				Projects which can probably be abandoned for various reasons. 6			
	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.
4. UNITED PROVINCES.																								
East Indian Railway (U. P., Chapter V, para. 35).	31	Bulandshahr-Phaphund.	5′ 6″																		5	Chandausi Audhpur.		
	32	Phaphund-Auriya .	5′ 6″	16																				
	33	Bindki Road-Mitaur	5′ 6″	24																				
	34	Allahabad-Maheza .	5′ 6″	39																				
Bengal and North-Western Railway (U. P., Chapter V, para. 36).	35	Ghugli-Maharajganj-Pharenda.							12	Sajendra-Bansgaon .	M	36												
									13	Basti-Bansi . .	M	28												
									14	Bahraich-Bhinga .	M	23												
									15	Shahjahanpur-Mailani.	M	36												
									16	Kashipur-Kashgarh .	M	30½												
									17	Bellarien-Dhaurahra	M	33½												
									18	Farukhabad-Badaun	M	56½												
5. PUNJAB.																								
North-Western Railway (Punjab, Chapter V, para. 44).	36	Batala-Beas .	5′ 6″	..																	6	Lyallpur-Chananwala.	5′ 6″	110
6. BIHAR AND ORISSA.																								
East Indian Railway (B. & O., Chapter V, para. 34).	37	Sone East Bank-Patna.	5′ 6″	75	13	Sainthia-Bausi .	5′ 6″	115									12	Barwadih-Karimam	5′ 6″	137				
					14	Hazaribagh Road-Hazaribagh Town.	2′ 6″	42									13	Barwadih-Katni .	5′ 6″	253				
					15	Barlarpur-Galghat .	5′ 6″	22																
					16	Gaya-Shergatti .	2′ 6″	22																
					17	Hazaribagh Road-Giridih.	5′ 6″	19																
Bengal-Nagpur Railway (B. & O., Chapter V, para. 35).	38	Jagatpur-Kendrapara.	5′ 6″	35																				
	39	Baitarani Road-Jajpur Town.	5′ 6″	13																				
	40	Bhadrak-Chandbali .	5′ 6″	25																				
Bengal and North-Western Railway (B. & O., Chapter V, para. 36).																	14	Sidwalia-Chakia .	M	27				
																	15	Darbhanga-Muzaffarpur.	M	38				
																	16	Tiwara-Sitamali .	M	30				
																	17	Hasanpur-Laheria Sarai.	M	34½				

APPENDIX L—*concld.*

Railway.	Projects which could probably be abandoned in favour of good roads. 1				Projects which probably cannot be justified owing to existence of good roads. 2				Projects probably justified by traffic offering, especially heavy merchandise even where good roads exist. 3				Projects required urgently as through connections. 4				Projects which may be required as through connections. 5				Projects which can probably be abandoned for various reasons. 6			
	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.	No.	Name.	Gauge.	Miles.
7. CENTRAL PROVINCES.																								
Great Indian Peninsula Railway (C. P., Chapter V, para. 38).	41	Amraoti-Narkhed .	5′ 6″	79	18	Dhamangaon-Yeotmal.	2′ 6″	34	19	Khamgaon-Chikli .	5′ 6″	38½					18	Hiwarkhed-Akot-Akola-Basim.	5′ 6″	91				
																	19	Borkhedi-Hinganghat.	5′ 6″	26				
																	20	Nagpur-Jubbulpore .	5′ 6″					
																	21	Jagdalpur-Dumermura.	5′ 6″	161				
Bengal-Nagpur Railway (C. P., Chapter V, para. 39).	42	Dhamtari-Kanker .	2′ 6″	44																				
8. ASSAM.																								
Assam Bengal Railway (Assam, Chapter V, para. 13).	43	Srimangal-Kulaura loop.	M	23					20	Chatak-Sylhet .	M	23					22	Gauripur-Gauhati .	M	26¼				
	44	Sikkani-Amguri .	M																					
	45	Lalaghat-Kukicherra	M	12																				
	46	Silchar-Doorband .	M	33½																				
	47	Diphu-Ingling .	M	15¾																				
9. NORTH-WEST FRONTIER PROVINCE.																								
North-Western Railway (N. W. F. P., Chapter V, para. 20).					19	Charsadda-Mardan-Swabi.																		
					20	Havelian-Garhi-Habibullah.																		
10. SIND.																								
(Sind, Chapter IV, para. 12).	48	Sind Right Bank Feeders.	5′ 6″	136									19	Bombay-Sind Connection.	5′ 6″	267								
	49	Khadro-Nawabshah	M	22½																				
		TOTAL .	..	1,710½																				

APPENDIX M.

Extract of paragraph 90 from the Report of the Indian Road Development Committee.

THE CO-ORDINATION OF ROAD DEVELOPMENT.

90. *Department of Communications.*—As we have said, we consider that the creation of a separate Road Department in the Government of India would be unnecessary and undesirable. We are of opinion that the functions of the Government of India in respect of roads can be efficiently performed by one of the existing departments, with the assistance of the Road Engineer with the Government of India whose appointment we recommend. It has, however, been urged by many witnesses that all methods of communication should be dealt with by one department. We have repeatedly emphasised the interdependence of roads and railways; and other Committees appointed by the Government of India in recent years have made similar recommendations. The Government of India Secretariat Procedure Committee of 1919, in paragraph 19 of its report, recommended:—

> "In the second place it appears to us that following the principles of allocation which we have laid down there would be great advantage in combining the various duties of Departments relating to Internal Transport and Communications in a single Department of Ways and Communications, which would embrace Railways, Tramways, Internal Navigation, Ports and Docks, Posts and Telegraphs, Aviation and Road Traffic including Motor Legislation."

Again, the Indian Railway Committee of 1920-21 said in paragraph 98 of its report:—

> "The advantages of a close relationship between railways, ports, water transport and road transport are obvious. They need correlation by a common controlling authority; they are feeders to each other, but at the same time their conflicting interests as carriers necessitate expert supervision and protection, all methods of transport are necessary for the development of India, and all new schemes whether for transport by rail, road or water, require to be considered by the same authority as a part of a well-ordered general programme. Only Imperial questions connected with road transport would, under our scheme, come under the immediate supervision of the Ministry, local road questions being left, as now, to local authorities."

Finally, the Indian Retrenchment Committee of 1923 recommended that a Communications Department should be constituted. We are of opinion that these recommendations should be reconsidered, and that the Government of India should again examine the possibility of bringing together all matters relating to communications and transport into one department. It is particularly important, from the point of view of this Committee, that the development of roads and railways should be directed by a single policy.

APPENDIX N.

Extract of paragraph 87 from the Report of the Indian Road Development Committee.

THE CO-ORDINATION OF ROAD DEVELOPMENT.

87. *Central Road Board.*—We have referred in paragraph 25 to the road or communications boards that have been constituted in most provinces. These boards appear to serve a useful purpose in advising local Governments on their road programmes, and it has been freely suggested that a Central Road Board should be appointed to co-ordinate road development throughout India. There is frequently, however, no clear idea of the constitution and functions of such a body. In its extreme form, the suggestion appears to be that the Board should be an independent executive body administering as trustees a separate road fund, to which the proceeds of central taxation on motor transport would be credited. This idea seems to be largely based on a misapprehension of the systems of road administration in other countries, which are sometimes believed to be directed by boards of this kind. It has been seen, however, in Chapter V that the administrative authority in other countries is a department of the Government; in Great Britain, the Ministry of Transport; in France, the national Service of Roads and Bridges; in the United States of America, the Federal Department of Agriculture and the State Highway Departments; in Canada, the Canadian Highways Commission and the Provincial Highways Departments; and in New Zealand, the Ministry of Public Works. We have already stated our view that grants from central revenue for road development can only be made through the constitutional processes prescribed by the Government of India Act, and we have formulated our proposals accordingly. It seems unnecessary to pursue this suggestion further. It should be obvious that a subject so closely associated with other branches of administration and with the life of the country generally, could not be removed from the control of the Government and the legislature.

APPENDIX O.

Co-ordinated Road Rail Development Inquiry.

NOTE ON POINTS FOR DISCUSSION WITH DISTRICT OFFICERS AND MEMBERS OF DISTRICT BOARDS.

During our tour, we hope to have frequent, if hurried, opportunities of meeting District Officers and certain representatives of District Boards, and, as discussion will necessarily be very brief, it is desirable to set down the points on which we wish to obtain information and opinion. These are as follows :—

(*i*) The area and population of the district.

(*ii*) The number of miles of railways, metalled roads, improved unmetalled roads and unimproved unmetalled roads in each district, and the length of each of these per 100 square miles of area and the density of population per square mile.

(*iii*) The greatest need of the district in the matter of road development.

(*iv*) The possibility of improving and maintaining unmetalled roads to a standard above that generally prevalent.

(*v*) The number of villages of population of 1,000 and over that are not on any metalled or unmetalled road maintained by Government or the district board and the approximate mileage of new road necessary to make connections from those villages to such roads; also the approximate cost per mile for unmetalled roads 20 ft. wide to give such connection.

(*vi*) The saving in the carriage of agricultural produce resulting over a metalled road as compared with an unmetalled road and the saving over an improved unmetalled road as compared with an unimproved unmetalled road.

(*vii*) The number of commercial motor vehicles plying in the district

(*viii*) The rates per passenger mile generally prevalent for motor bus services.

(*ix*) The general benefit of passenger motor services and opinion as to the desirability and necessity of these competing with railways.

(*x*) Whether certain restrictions should be imposed upon passenger motor services in the direction of requiring a higher standard of service for the public.

(*xi*) Whether there is at present any business in the carriage of goods by road motor transport and the prospects of this for marketing or otherwise.

(*xii*) Whether there is any opening for slow moving mechanical transport capable of carrying goods over unmetalled roads, and at what rate per ton mile would such transport command business for, *e.g.*, marketing.

(*xiii*) Whether there are any branch railway projects pending in the district and if so whether a road would serve present and probable future needs sufficiently well.

1. MADRAS

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MADRAS.

CHAPTER I.—BRIEF ITINERARY AND PERSONS INTERVIEWED.

1. *Officials deputed to assist us.*—(*a*) The Government of Madras deputed M. R. Ry. Rao Bahadur T. K. T. Viraraghavachariar Avl. to assist us in collecting facts and statistics regarding the roads in the Presidency, and this gentleman kindly drew up for us the programme of our tour, which enabled us to come into contact with the officials of no less than 9 District Boards during the eleven days we were in the Presidency. Rao Bahadur T. K. T. Viraraghavachariar Avl. also accompanied us during our tour of Madras, and we found his knowledge and experience of great value.

(*b*) The South Indian Railway deputed Mr. E. A. Glanville, Deputy Chief Engineer, to travel with us over the South Indian Railway, and this officer attended all the meetings arranged with the District Boards in the area served by the South Indian system. Mr. Glanville also furnished us with information in regard to branch line projects contemplated by the South Indian Railway. Mr. Jeffcott Smith, Dy. Commercial Manager, South Indian Railway, collected for us the facts and statistics regarding motor competition so far as it is affecting that railway.

(*c*) Mr. C. G. W. Cordon was deputed by the Madras and Southern Mahratta Railway to collect information in regard to road development policy, branch line projects, and motor competition so far as it affects that railway in the Madras Presidency.

(*d*) Mr. Mazumdar, Publicity Officer of the Bengal Nagpur Railway, performed the same duty on behalf of that railway.

(*e*) We are greatly indebted to all these gentlemen for the trouble they have taken in providing us with the basis of our report.

2. *Itinerary.*—During our tour of Madras we travelled 1,679 miles by rail and 252 by road and we visited Madras, Tanjore, Trichinopoly, Coimbatore, Ootacamund, Chittoor, Vellore and Bezwada.

3. *Interviews and meetings held.*—(*a*) His Excellency the Governor granted us an interview while we were at Ootacamund, and discussed with us the subject of our investigation.

(*b*) *Government Officials.*—While we were in Madras Diwan Bahadur Gopalaswami, I.C.S., Secretary to the Government of Madras, Public Works and Labour Department, asked us to call and discuss with him the Tiruppur-Satyamangalam project of the South Indian Railway. Mr. E. Conran Smith, Secretary to the Local Self-Government Department, gave us two opportunities of discussing with him our terms of reference so far as they concerned the Madras Presidency.

(c) *District Boards.*—While we were in the Presidency we were brought into contact with the officials of 9 District Boards, and, at many of the meetings, representatives of other interests had been invited to be present; so that we had the advantage of hearing not only official views, but also much responsible unofficial opinion. We give below brief particulars of these meetings:—

(1) *Tanjore.*—We met Mr. M. K. Duraiswami Iyyar, District Board Engineer. The Collector was unfortunately on tour, and could not meet us.

(2) *Trichinopoly.*—The Collector presided over a meeting at which the Chairman and many members of the District Board were present.

(3) *Coimbatore.*—Diwan Bahadur C. S. Ratna Sabapathy Mudaliar, M.L.C., President of the District Board, kindly arranged a representative gathering to meet us including the following gentlemen:—

Mr. G. W. Wells, I.C.S., District Magistrate.

Mr. L. U. Ponnai Gownder, Vice-President of the District Board, and Member, Indian Chamber of Commerce.

Mr. J. E. Elliott, District Superintendent of Police.

Mr. Nightingale, Executive Engineer, Public Works Department.

Mr. Pereira, District Board Engineer.

Mr. F. J. Stanes, President of the European Chamber of Commerce.

Mr C. E. Wootton of Stanes & Coy., Member, European Chamber of Commerce.

Mr. L E. Amor, General Motors, Ltd.

Mr. L. E. Hurtis and Mr. Lionel Dee of the United Motors, Coimbatore.

(4) *Nilgiris.*—Mr. R. B. MacEvan, I.C.S., Collector of the Nilgiris, presided over a meeting at which were present, among others, M. R. Ry. A. B. Arigownder Avl., B.A., M.L.C., President, Nilgiri District Board, Mr. Chatterton, Vice-President, M. R. Ry. Sanjiva Roa Avl., District Board Engineer, Col. Ward and Capt. Windle, Members of the District Board, Mr. Milton, District Superintendent of Police, and Mr. Nainan, Municipal Engineer.

(5) *Chittoor.*—The President of the District Board presided over a meeting at which the Vice-President of the District Board and other members were present. The District Supdt. of Police, Mr. Chadwick, also attended the meeting.

(6) *Vellore.*—Mr. E. Bennett, I.C.S., presided over a meeting which included most of the members of the District Board.

(7)-(9) *Guntur, Kistna, and West Godaveri.*—A large gathering of representatives of the three District Boards in question

assembled at Bezwada on September 22nd, under the Chairmanship of Sree Rajah Venkata Ramayya Apparao Bahadur, Zamindar Garu, M.L.C., President, Kistna District Board. At this meeting the Collector, Kistna District, and the Assistant Collector were present.

(*d*) *Railway Administrations.*—(1) At Madras, the Head Quarters of the Madras and Southern Mahratta Railway, we discussed the subjects of our enquiry with Mr. H. N. Colam, Agent, Mr. A. W. Parsons, Chief Transportation Superintendent and Traffic Manager, and Mr. C. G. W. Cordon, Dy. Transportation Superintendent of that Railway.

(2) At Trichinopoly, the Head Quarters of the South Indian Railway, we met Mr. Jeffcott Smith, Dy. Commercial Manager of the Railway. We subsequently saw Sir Percy Rothera, Agent of the Railway, at Ootacamund.

(*e*) *Other interests.*—(1) At Madras we arranged a meeting with the Madras Branch of the Indian Road and Transport Development Association, at which Col. Smith, General Secretary of the Association, was present.

(2) The Local and Municipal Engineers Association at Madras and Bezwada wished to lay before us their views on the questions we are investigating, and we accorded interviews to representatives of both these bodies.

CHAPTER II.—GENERAL CONDITIONS OF COMMUNICATIONS.

4. *Communications.*—The area of Madras is 122,620 square miles and the population according to the 1931 census is 46,740,107 giving an average density of population of 382, but the density naturally, over so wide an area, varies greatly. In Vizagapatam it is 790, in East Godavari 754, while in the Nilgiris and in Anantapur it is as low as 172 and 156 respectively. There are 2,024 miles of broad gauge, 2,251 miles of metre gauge, and 102 miles of narrow gauge railway or a total of 4,377 miles; the railways serving the Presidency being the Madras and Southern Mahratta and the South Indian. There are 23,415 miles of metalled roads including roads metalled or surfaced with gravel and laterite of which 1,160 miles are in charge of the Public Works Department and the remainder in charge of local bodies. There are 2,681 miles of railways and metalled roads parallel and within 10 miles of each other; that is 11½ per cent. of the metalled roads and 61 per cent. of the railways. There are, further, some 3,700 miles of improved or motorable earth roads, all in charge of local bodies, and a balance of 5,754 miles of unimproved unmetalled roads. In addition to the above there are a very large number of improved and unimproved earth roads maintained by Union Board Panchayats, regarding which no statistics are available.

5. *Classification of roads.*—The roads in the province are divided into four classes, according to certain standards of specifications and maintenance and for the purposes of administration and finance. Class I roads, or trunk roads, are metalled roads with metalling not less than 12 feet wide maintained to a superior standard. With the exception of a relatively small milage, which for administrative convenience is maintained by the Public Works Department, Class I roads are maintained by district boards who are reimbursed by the local Government for their actual outlay, subject to a prescribed maximum, the payment being made upon the certificate of the Superintending Engineer of the Public Works Department that the road has been properly maintained. The maximum is usually prescribed on a milage basis, Rs. 500 per mile per year being an average figure. It appears that before the present depression district boards were often spending more on trunk roads than they received from Government. Class II roads may be metalled or gravelled, and are generally of the same typical section as Class I roads; they are maintained by district boards who receive a fixed grant from Government on the certificate of the Collector of the district that the roads have been properly maintained. Class III roads may be metalled or gravelled but are maintained to a substantially lower specification than Classes I and II; they are in the charge of local bodies, including Taluk boards who maintain roads of Classes III and IV and are dependent for their resources upon a cess on the land revenue at the same rate as the district board cess. Within the Taluks there are Union Board Panchayats which administer a village or a group of villages and depend upon their own cess and on grants.

6. *Village development fund.*—A recent innovation is the creation of a village development fund which is raised on the land cess at the rate of 3 pies per rupee for the whole district and is administered under the control of a special board consisting of the Presidents of the district and Taluk boards; it is applied to schemes of improvement of village communications, sanitation, and education in areas not directly served by Union Board Panchayats.

7. *Improved unmetalled roads.*—There are, as already stated, some 3,000 miles of improved or motorable unmetalled roads in the charge of local bodies. This is not a recent development but the result of gradual evolution that has been in progress for some years and is constantly receiving the attention of all the local bodies concerned. This improvement may be attributed to the advent of motor transport and to the consequent public demand for increased facilities for that transport to penetrate outlying areas. It may be said that, where improvement is possible, something has been done and much more could be attempted with more money. On the other hand there are areas where conditions are not suited to this type of improvement.

8. *Expenditure on roads.*—The expenditure on roads of all classes for a period of years ending with the year 1926-27 was given in statement F at page 99 of the report of the Indian Road Development Committee. The expenditure in subsequent years has been as set out below. It will be noticed that the greater part of the expenditure is classified as "local". As explained in paras. 4 and 5 above, about 95 per cent. of the metalled roads are in the charge of local bodies, which are largely subsidised by the local Government, thus the expenditure shown as local is to a large extent actually provincial.

	Original works.		Repairs.	Total. From revenue.
	Loan.	Revenue.		
1928-29.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	..	10·82	9·25	20·07
Local	4·15	35·01*	95·62*	130·63
Total .	4·15	45·83	104·87	150·70
1929-30.				
Provincial	..	9·86	11·49	21·35
Local	5·53	43·89*	99·79*	143·68
Total .	5·53	53·75	111·28	165·03
1930-31.				
Provincial	..	15·94	12·95	28·89
Local	..	(a)88·85*	113·71*	202·56
Total .	..	104·79	126·66	231·45

* These include expenditure from provincial grants.
(a) No separate figures available regarding expenditure from loan funds.

9. *Communications in relation to the area and population served.*—As explained in our report on the conditions in the Punjab, in order to enable a comparison to be made of the state of communications in

different provinces unaffected by the presence or absence of large desert or forest areas, we propose to present these statistics upon the basis of the total area and population of districts having a density of population of 100 per sq. mile and over. In Madras there is no district that has a density below 100 although in a number of districts there must be large areas of forest land very thinly populated. We are, however, unable to go into such detail as to consider areas less than a civil district and we therefore, in Appendix 1, put forward certain statistics for the whole Presidency as a rough basis of comparison with conditions elsewhere. It will be seen that the mean density of population is 382 per sq. mile; that the area served by 1 mile of railway is 28 square miles (the mean condition being thus that the most distant point from any railway is about 14 miles); that the area served by each mile of metalled road is only 5·23 square miles, while, if improved and motorable unmetalled roads are included, the area served by 1 mile is only 4·52 square miles. Finally the area served by all roads maintained by public authority is 3·73 square miles, per mile of road.

10. *Railways.*—Taking the Presidency as a whole, the mesh of the railway system is not so fine as in some other parts of India, but having regard to the considerable area of relatively inaccessible and, from the railway point of view unremunerative, mountain and forest land, a more detailed examination would doubtless show that in the areas remunerative to railways, railways are not scarce. We deal later with the prospects of further railway development in mentioning various pending projects.

11. *Roads.*—The milage of metalled roads both in respect of the total and on the basis of area is in excess of that in any other Province, and the cost of maintenance is relatively low. The present financial stringency, however, coupled with the unfortunate effects of the abolition of tolls and the imposition of a provincial motor vehicle tax, which has failed to produce the expected equivalent revenue, has deprived local bodies, who previously depended largely upon Government grants and revenue from tolls for this purpose, of the funds necessary to maintain their roads. Even without this misfortune, the impression we have gathered is that the sums previously available for road maintenance were proving to be inadequate, and it is now clearly necessary if roads are not to deteriorate seriously, that additional funds should be provided. The reduction in the income of district boards by loss of toll revenues, which dates from the year 1931-32, has already, we understand, led to enforced neglect of roads, to rapid deterioration and to the accumulation of arrears of maintenance and renewal which will ultimately be more costly to repair than if taken in hand in due time. The greatest present need is therefore the provision of adequate funds to maintain the existing road system; and, further, while at the level of cost at which metalled roads in the province have generally been maintained in the past, it seems that for the general case no surface treatment with tar or bitumen could be justified upon the grounds of economy, nevertheless such an improvement is very desirable in order to reduce the clouds of dust at present raised by every passing motor vehicle which constitute a danger

both to the public using the roads and a menace to the health of villages along the roads. At least in the neighbourhood of important towns and villages metalled roads should be surface treated. The position thus is that before any great move forward can be made, the existing provision for maintenance must be increased and a considerable milage must be rendered less dusty.

12. *Need for the provision of bridges.*—There is also great need for further bridges. In the coastal belt right round the province, bridges are wanted not only over the larger tidal waterways but also over a host of minor streams and drainages, and these must naturally, as a general rule, be high-level. In the interior of the province and in the neighbourhood of hilly country, adequate crossings are not less necessary, but as the run-off is frequently in spate and largely seasonal, submersible bridges or even causeways should often suffice. There is at present no comprehensive survey available of the cost of providing for the more urgent necessities. The absence of adequate bridges or causeways inevitably reduces the load which can be carried upon a country cart and in consequence enhances the real cost of marketing and the actual cost of commodities. It is even possible to suggest that in so far as there is still a considerable amount of purely subsistence farming in the Presidency, this is in no small measure due to the absence of adequate communications, particularly bridges, and that improvements in this direction might reasonably be expected to lead to some extent to the growing of money crops which would improve the condition and increase the purchasing power of the cultivator.

12-A. *Saving in cost of carriage over improved roads.*—In response to our enquiry we were informed that the saving in present circumstances in the cost of carriage of agricultural produce over a metalled road or an improved unmetalled road as compared with an ordinary unmetalled road as far as these could roughly be estimated was as follows:—

District.	Saving on metalled road as compared with ordinary unmetalled road.	Saving on improved unmetalled road as compared with ordinary unmetalled road.
	Per cent.	Per cent.
Tanjore	20	5
Trichinopoly	50	20
Coimbatore	*	*
Nilgiris	†	†
Chittoor	25	..
North Arcot	20	20
Kistna	30	30
West Godavari	20	20
Guntur	33	..

* In Coimbatore the saving is said to be one anna per mile per double bullock cart load in the first case, and 1½ annas per double bullock cart load in the second.

† The cost of carriage in the Nilgiris is stated to be as follows:—
On metalled roads 8 annas per ton-mile.
On unmetalled roads 14 annas per ton-mile.
On unimproved unmetalled roads Re. 1 per mile.

The question is of course difficult to answer, and it was evident that in a number of cases it had not previously been considered in this light. It is clear, however, that in the opinion of the district boards concerned there is, as might be expected, a substantial saving in carriage of agricultural produce to be expected as a result of expenditure to provide good roads.

12-B. *Link to important villages.*—We enquired the number of villages having a population of 1,000 and over which are not on any public road and we tabulate below the information we collected on this point in the districts which we visited.

District.	No. of villages of 1,000 population and over not on any public road.	Milage of road necessary to link these with the public road.	Cost per mile for 20 ft. wide unmetalled road.
1	2	3	4
			Rs.
Tanjore	No information available.		
Trichinopoly	None	..	..
Coimbatore	230	1,200	650
Nilgiris	90	100	..
Chittoor	No information available.		
North Arcot	309	600	1,000 to 2,000
Kistna	185	500	1,500
West Godavari	213	660	1,500
Guntur	417	1,250	4,000
TOTAL	1,444	4,310	

It will be seen that in six districts alone there appear to be over 1,400 villages of this size which are not on any public road and that these would require the provision of some 4,300 miles of new road to connect them. The amount of money which would be involved is obviously very great and we merely record the information we received with the remark that it is generally conceded that the absence of direct connection with a public road is a serious disability to the villages concerned, and that the matter is one which apparently requires attention. We do not venture to suggest that it should be a part of the business of district or taluk boards to provide and maintain connection with all major villages, or that villages themselves should not do this, but we do think it is clear that the whole question requires consideration if the benefit of road system is to be brought to the mass of the population.

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

13. *Railways serving the Presidency.*—The Railway Administrations serving the Presidency have an approximate milage therein as follows :—

—	B. G.	M. G.	N. G.	Total.
(A) Madras and Southern Mahratta .	1,078	966	..	2,044
(B) South Indian	605	1,249	102	1,956
(C) Bengal Nagpur	320	..	..	320
(D) H. E. H. the Nizam's State Railway*.	21	36	..	57
	2,024	2,251	102	4,377

Of this total railway milage about 2,681 miles, or 61 per cent. of the whole, have a metalled road running parallel and within ten miles of them, the approximate distribution being :—

—	Total milage.	Milage of roads parallel.	Per cent.
(A) M. & S. M.	2,044	1,300	63
(B) South Indian	1,956	1,150	59
(C) Bengal Nagpur	320	195	61
(D) H. E. H. the Nizam's State R. .	57	36	63
	4,377	2,681	61

There is accordingly extensive scope for motor competition with the railways in the Presidency. Moreover, at the first Road Conference in April 1930 (and subsequently) when local Governments submitted their roads schemes on which they proposed to spend their share of allotment from the Central Road Development Account, the Madras Government presented an extensive list of bridges, causeways, and missing links on many of the trunk roads parallel with railways in the Presidency. The roads in question and the railway milage likely to be affected are as follows :—

Road.	Railways.	Railway milage.
Great North Trunk Road (A1) . .	*M. & S. M.* Madras-Waltair . . .	485
,,	*Bengal Nagpur.* Waltair-Bihar and Orissa Boundary.	230
Vizianagram-Komatapetta Road (A18)	. . . . .	120

* This Administration works on behalf of the Secretary of State the Bezwada Extension Railway (Broad gauge 21 miles) and the Dronachellam-Kurnool Railway (Metre gauge 36 miles).

Road.	Railways.	Railway milage.
Great Southern Trunk Road. (A2) .	*South Indian.* Madras-Trichinopoly . . .	202
Cuddalore-Vellore Chittoor Road. (A10)	*South Indian.* Cuddalore-Katpadi . . .	126
	M. & S. M. Katpadi-Chittoor . . .	25
Madras-Bombay Road. (A3) . .	*M. & S. M.* Chittoor-Dharmavaram-Ananta-pur	181
		1,369

Subsequently the Madras Government asked for grants for the following two special works:—

(*a*) The replacement of a causeway over the Pennai river in the North Arcot district, by a bridge, on the grounds that this was on the Bombay-Poona-Bangalore-Madras Road, a road of all-India importance on which the bridging of all serious interruptions was necessary. This road does not run parallel with the M. & S. M. Railway for the whole distance between Madras and Bangalore, but its extended use by motor transport between Madras, Chittoor, the Kolar Goldfields, and Bangalore will affect the M. & S. M. Railway earnings between these points.

(*b*) In collaboration with H. E. H. the Nizam's Government the construction of a road bridge over the Tungabhadra River near the station of that name on the M. & S. M. Railway. The construction of this bridge will affect the earnings of the M. & S. M. Railway between Bellary, Guntakal, and Raichur in H. E. H. the Nizam's territory.

A.—Madras and Southern Mahratta Railway.

14. *Area Served.*—The Madras and Southern Mahratta Railway has three main broad gauge routes radiating from Madras. Its South West line runs generally due west to Bangalore in Mysore territory; and 42 miles from Madras, at Arkonam, the North West line takes off, and running generally in a north-westerly direction through the Madras Deccan, crosses the Tungabhadra River into the dominions of H. E. H. the Nizam, and joins at Raichur, 351 miles from Madras, the G. I. P. South East line, with which it forms the trunk route between Madras and Bombay. The third main line, the North East line, runs parallel with the east coast through the towns of Nellore, Bezwada and Rajahmundry and meets the Bengal Nagpur Railway Khargpur-Waltair Section at Waltair, forming with it the trunk route between Madras and Calcutta

In addition to the broad gauge lines, and branches, the Madras and Southern Mahratta Railway has a metre gauge main line running from east to west across the peninsula from Hubli to Masulipatam, and between Hospet and the latter place the line serves the Bellary, Guntur, and Kistna Districts. Further south are a metre gauge chord connecting Guntakul with Bangalore City, and the Katpadi-Gudur-Pakala-Dharamavaram Sections. These last were originally built as famine lines by the South Indian Railway and were handed over to the M. & S. M. at the end of 1908 when the railways in South India were rearranged at the termination of the contract of the old Madras Railway Company.

15. *Motor Competition.*—The Madras and Southern Mahratta Railway have recently undertaken a survey of the public motor transport activities now being run in competition with the railway. At present there are about 650 buses running competitive or semi-competitive services throughout the area served by the railway and of these 412 ply in the Madras Presidency. The most severe competition is felt in the Kistna, West Godavari and East Godavari Districts, all three fertile areas on the East coast with a high density of population. The M. & S. M. Railway reports intense competition in connection with the Bezwada-Masulipatam branch a metre gauge line, 50 miles in length—owned by the Kistna District Board. 25 buses operate on this road parallel with this line which is of such construction that the speed of passenger trains over it is limited to 30 miles an hour and the buses running in competition can perform the journey quicker. It is estimated that nearly Rs. 6 lakhs will be required to bring the Bezwada-Masulipatam branch upto the standard necessary for a fast passenger service capable of competing with the buses.

A few of the bus services have a comparatively long range, as for instance:

	Miles.
Bellary-Kottur	56
Bangalore-Hindupur	63
Madras-Vellore	82

16. *Estimated Losses.*—The M. & S. M. Railway have framed an estimate of the losses incurred by the railway due to motor competition, on the basis suggested in Mr. Maclean's report, *i.e.*, that Rs. 10 per day per bus may be lost to the railway owing to a competitive bus service. The railway administration considers that the average daily bus earnings are much higher than this amounting to as high a figure as Rs. 50, but it is recognized that this does not all represent traffic diverted from the railway, as buses have created a traffic of their own; again though buses run with a high percentage of seats occupied, some allowance must be made for empty running. In view of these considerations the railway considers the Rs. 10 basis a reasonable one, and with 647 buses running competitive services the estimated loss to the railway would amount to

Rs. 23,61,500. This figure relates to the whole of the M. & S. M. Railway system, and should be reduced approximately by $\frac{1}{3}$ to represent the losses in the Madras Presidency, as of the 647 buses 412 ply over routes in Madras.

17. *Goods Traffic by Motor Transport.*—The railway reports that so far very little goods traffic is being carried by motor transport, in competition with the railway; an important exception being toddy and country liquor, for which motor transport can offer a quicker and more convenient service than the train.

18. *Measures being adopted to meet competition.*—The M. & S. M. Railway reports that to meet the competition much has been done to rearrange the time table to provide the public with a more convenient service and special attention has been paid to junction connections. In one case, where a number of broad and metre gauge connections were not very suitably adjusted, and involved long waits for passengers, there was a considerable leakage of passengers to the road. The train timings were rearranged so as to bring connecting trains into the junction as closely together as practicable and it is interesting to note that passenger earnings instantly responded. The Railway has under consideration the running of light trains, or, possibly, some smaller unit, but a decision has not yet been reached as to which design to adopt.

19. *Pilgrim Tax.*—The Railway reports that the local Government have sanctioned the levy of Pilgrim Tax at 12 towns served by the Railways. One of the conditions attaching to the levy of this tax is that it shall only be collected from passengers proceeding to the pilgrim centres from places more than 30 miles distant, but the railway states that this condition is not invariably carried out. The railway has reported this to the local Government and has pointed out that motor competition is particularly severe in the case of traffic within 30 miles of pilgrim centres; and that if the tax is to be collected from the railway passengers it should also be imposed on motor vehicles, or on the passengers using them, so that the conditions under which the railways and motor services operate may be equalized.

The Madras Government have since called the attention of Local Authorities to this and have suggested that the procedure actually in force at Pandarpur in the Bombay Presidency might be adopted. All passengers visiting this town during festivals pay the tax, irrespective of whether they travel thither by railway or by road. The local Government have promised to give the matter further consideration when they have received the views of Local Authorities on the suggestion.

B.—South Indian Railway.

20. *Area Served.*—The Broad Gauge main line of the South Indian Railway runs from Jalarpet (132 miles from Madras on the M. & S. M. line to Bangalore), south-west to the Malabar Coast, and thence turns northwards along that coast to Mangalore. There are two Broad

Gauge branches: one serving Coimbatore and Mettupalaiyam, where a metre gauge line climbs the Nilgiris to Coonoor, and Ootacamund; the other running alongside the Cauvery River, connecting Erode with Trichinopoly, the Head Quarters of the railway. The South Indian Railway exercises running powers over the M. & S. M. line between Jalarpet and Madras Central.

South of its broad gauge main line the South Indian has an extensive metre gauge system, including a main line between Madras, and Rameswaram, which forms the trunk railway route to Ceylon. There are also several branch lines, serving all the important towns in the extreme south of the peninsular. The South Indian Railway also penetrates the two states of Cochin and Travancore. The area served by the railway is generally densely populated and the volume of passenger traffic carried by the railway is, in consequence, of considerable importance.*

21. *Motor competition and estimated losses.*—The Railway Administration undertook a survey of competitive bus services in July and it was found that there were 53 such services employing 396 buses. Most of the services are for short distance, the only long range runs being:—

	Miles.
Tiruvannamalai-Vellore Cantonment	51
Madura-Bodinayakkanur	58
Srivilliputtur-Tenkasi Jn.	51
Quilon-Shencottah (Travancore)	59

To arrive at a rough estimate of the losses occasioned to the railway by these services the following two factors have been taken: (*a*) Estimated number of passengers carried by the buses daily and (*b*) the fare they would have paid if they had travelled by rail. On this basis the railway loses about Rs. 4,600 daily, or about Rs. 16¾ lakhs annually. If we assume that each competitive bus diverts Rs. 10 per day from railway earnings the loss works out at about Rs. 13½ lakhs and we think that the latter figure may be nearer the mark, as the first figure assumes that the buses carry the same number of passengers daily throughout the year, which can hardly be supported. All such figures are, however, conjectural, and a far closer check of the actual traffic carried by buses is really needed before railways can be certain of what they are actually losing. It is in no spirit of criticism that we make this remark, for we realize the difficulties involved in sparing adequate staff to find out the business actually handled by a number of owner bus drivers, who keep no accounts, and issue no tickets to the passengers they carry; and who constantly change their fares.

* The Coaching and goods earnings of the South Indian Railway for the five years ending March 31st, 1931 were:—

	Coaching. Rs. lakhs.	Goods. Rs. lakhs.
1926-27	295·16	271·26
1927-28	311·56	287·99
1928-29	296·36	283·05
1929-30	333·97	301·48
1930-31	313·58	281·46

22. *Goods Traffic by motor Transport.*—The South Indian Railway reports that private lorries are largely used by the tea and coffee estates in the area served by the railway, and that public carriage of goods by lorry is undertaken on the following routes competitive with the railway :—

Between	And	Distance By Road.	Distance By Rail.
Conjeeveram	Madras	34½	57
Walajahbad	Madras	40½	49
Chingleput	Madras	36	35
Conjeeveram	St. Thomas' Mount	37½	48
Walajahbad	St. Thomas' Mount	34½	40
Chingleput	St. Thomas' Mount	29	27
Cuddalore	Panruti	15½	17
Kodaikanal Road	Virudhunagar	42	52
Rajapalaiyam	Sivakasi	19½	18
Rajapalaiyam	Virudhunagar	35½	33
Mettupalaiyam	Coonoor	18½	17
Mettupalaiyam	Ootacamund	30	29

The railway did not furnish us with any figures showing the losses involved. We were informed at our meeting with the District Board at Vellore that there were a number of motor vehicles in that district employed by private firms for the carriage of leather goods, toddy, etc.

23. *Measures taken by the Railway to meet competition.*—To meet motor competition the Railway has introduced cheap return tickets between certain points and has also put on extra trains at timings more suitable to the travelling public making use of the railway for short distances between important towns. Some measure of success has attended these efforts.

24. *S. I. Railway Suburban Electrification.*—In referring to the electrification of the South Indian Suburban system in the neighbourhood of Madras, we do not, of course, wish to suggest that electrification is to be regarded as a practicable scheme for meeting motor competition. We wish rather to emphasize what a gap exists between the capacity of a single line of which the greater route milage of Indian Railways consists, and a line which will give the public in the neighbourhood of large towns the fast and frequent train service which they need—a need which the coming of the motor bus is stimulating more and more. The S. I. Railway metre gauge line into Madras until quite recently consisted of a single line, which carried with difficulty not only a fairly heavy suburban traffic in steam worked trains, but long distance trains as well. We gather that the line was congested and that a good deal of the short distance passenger traffic was diverted to the road running alongside the railway. To adapt it for a fast frequent suburban service this line was doubled for three miles, and trebled for 15, and the whole 18 miles were electrified, besides which many level crossings had to be eliminated—a bold enterprise which had to be justified not so much by the density of the traffic already existing, as by the promise of greater development in the future. The single line carried between 6,000 and 7,000 passengers

daily into the city; the electrified line, though only opened for a few months, has carried as many as 20,000 passengers daily, and is, of course, still working much below its full capacity. The motor bus services on the trunk road alongside the railway have been largely curtailed, and many of the buses, we are informed, have been transferred to the trunk road further south, beyond the radius of the electrification, and have affected the passenger earnings on that section of the railway.

Thus though it may be reasonably claimed that the electrification—which has virtually involved the construction of a new line of 18 miles in the neighbourhood of a large city—has with its quick acceleration, and frequent and regular service met the motor competition successfully, the case is exceptional, and there are few suburban areas in India, where the doubling and electrification of a single line could be justified to meet road competition.

25. *Limitations of a single line.*—It is, in fact, difficult to see how a single line, with the inevitable delays inseparable from it, can meet the growing demand from short distance passengers, for a more frequent service of transport at regular intervals. A single line can, of course, move large numbers of passengers if they are concentrated in full train loads, but the trains must run at long, and, almost certainly, irregular intervals. Even the use of a smaller unit than the ordinary train on a single line, such as a light train, or a rail motor, can we think do little to decrease the intervals between successive trains, or provide a frequent, regular service for a comparatively small number of passengers: for it must not be forgotten that, while in passenger carrying capacity any light unit is strictly limited compared with a train, for purposes of safe working it occupies a block section just as completely as a train carrying four or five times as many passengers. No single line of railway, even when equipped with special light, units, or rail motors, could possibly provide, say a half-hourly service throughout the day between two important towns, as can a properly regulated bus service. We refer to this again in para. 29, and shall deal with it further in the general part of our report.

26. *Pilgrim Tax.*—The South Indian Railway reports that there are no towns served by the railway where terminal tax is levied on goods but pilgrim tax is levied permanently on passengers leaving the following towns for distances beyond a free zone which is about 30 miles:—

Madura, Dhanushkodi and Rameswaram.

At 16 other towns pilgrim tax is leviable during periodical feasts between dates notified from time to time.

The railway complains that the tax is unfair in its incidence, inasmuch as it is not collected from bus passengers, because, it is stated, this is impracticable. With conditions as they are at present, we agree that it is hardly possible to levy the tax on bus passengers; unlike railway trains, bus services are generally run to no fixed timing, tickets are not issued to the passenger, nor do the proprietors generally main-

tain any proper system of accounts. We think, however, that with the better control and regulation of bus traffic which must, in time, come into being, it will be possible to levy the tax on bus passengers, and we suggest that Municipalities, which have to provide from time to time for a heavy influx of visitors, are therefore interested in the stricter regulation of public motor vehicles.

C.—Bengal-Nagpur Railway and Bus Competition.

27. *Area Served.*—The Bengal-Nagpur Railway serves two districts in the extreme north-east of the Presidency—Ganjam and Vizagapatam. From Waltair northwards the railway operates the East Coast route between Madras and Calcutta; and it has in recent years constructed a new through connection with Raipur in the Central Provinces, which takes off at Vizianagram, and runs due north thence to the Bihar and Orissa boundary. Metalled roads run parallel with both lines for several miles, and the railway reports the following cases of competitive and short circuiting bus services:—

Stations affected.	Competitive services.	Miles.
Vizianagram.	Vizagapatam Town	40
Alamanada	Vizagapatam Town	29
Vizagapatam Town	Simhachalam	7
Pandurti	Vizianagram.	27
Vizianagram.	Salur	44
Vizianagram.	Chipurupalle	20
Donkinavalasa	Bobbili	8
Vizagapatam	Pendurti	13
Tekkali	Naupada	5
Ichchhapuram	Berhampur	5
Chatrapur	Berhampur	14
Palasa	Tekkali	21
Chatrapur	Rambha	17
Baruva	Berhampur	33
	Short circuiting services.	
Parlakimedi	Palasa	41
Parlakimedi	Tilaru	43
Parlakimedi	Chicacole Road	55

28. *Estimated Losses.*—In estimating the losses to the railway occasioned by these services the railway has taken (1) the seating capacity of the buses on each route, and assumed (2) daily trips in accordance with the milage as follows:—

6 round trips for services within 10 miles.

4 round trips for services exceeding 10 miles but less than 20 miles.

2 round trips for services exceeding 20 miles.

These two factors multiplied by the third class fare for 300 days in the year gives a figure of Rs. 1,61,362. With the Rs. 10 per day formula, the estimated losses would amount to Rs. 1,54,250. We think they may probably be placed at about Rs. 1½ lakhs.

29. *Organized passenger motor transport services in Madras.*—In response to our request, the Madras Committee of the Indian Road and Transport Development Association kindly gave us information regarding motor transport organizations which had developed in recent years in the Presidency. We were informed that in one town the principal passenger bus services were concentrated in the hands of one motor transport company, and during our visit to this place, we took the opportunity of visiting the head office, garage, and bus stands belonging to this company. From what we could see during a brief visit, the company appears to be providing the public with a good and reliable service of buses on practically all the important roads radiating from this town. The range of the services varies between 20 to 50 miles, and some of the routes are competitive with the railway. Although the company is not ordinarily protected by a monopoly, on some roads only their buses are allowed to ply.

The following points particularly impressed us in regard to this concern :—

(1) Buses run to a regular time table and at frequent and regular intervals ;

(2) They start from a stand at a convenient position in the town ;

(3) These stands (of which we saw two) are under shelter, and have waiting accommodation for passengers ;

(4) A booking office is provided at each stand, and tickets are sold to intending passengers.

There could be little doubt that the services supplied by this Company are meeting a public need. The fares charged are on an average 4 to 5 pies a mile, as against $3\frac{1}{2}$ pies the usual railway fare. But for one service competitive with the railway a fare of 6 pies per mile was charged, but even at this rate, the bus apparently could compete with the train, for we saw a line of passengers waiting to take tickets for a bus due to leave in a few minutes, for the distant town on this route. Apparently the railway suffers from the disadvantage of having its stations at some distance from the centre of the town at each place, and though the local trains have recently been added to, and accelerated to meet the bus competition, and now take 10 minutes less than the bus to perform the journey, this advantage and the cheaper railway fare are not sufficient to counteract the extra time and expense involved in getting to and from the railway station.

Organized motor bus services such as these are at present very rare in India, but we have little doubt that, as in other countries, they will develop quickly, and successfully along these lines. For short distances at least the public undoubtedly appreciate a transport service which, while sufficiently flexible to be frequent, yet runs to a fixed time table, and gives them a door to door service. A single line of railway cannot hope to give such a service for the reasons we have given in para. 25

above; and even if the railway can quote cheaper fares, the advantage of these may be entirely counter-balanced by other inconveniences.

29-A. *Competition between Railways and Motor Transport, and operation of Motor Transport by Railways.*—During the meeting convened for us by the Collector at Vellore, two interesting points were raised by one of the delegates. He asked us (1) whether it could be regarded as reasonable to permit railways to use their great resources unrestrictedly to stifle motor competition, and, on the other hand, (2) why railways could not themselves operate motor transport. We think both points of considerable importance, but we offer no comments on them here as we hope to deal with them fully in the general part of our report. We record the questions, as showing that definite opinions are taking shape in the matters we are investigating.

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION.

30. *Number of motor vehicles.*—The total number of motor vehicles which paid provincial tax for one or more quarters in 1931-32 and which may be taken for our purpose as representing the number of vehicles in use in that year was as follows:—

Motor buses	4,171
Lorries (Trade)	887
Lorries (General)	150
Taxis	652
Cars	11,862
Motor cycles	2,247

Under the Madras Motor Vehicles Taxation Act, 1931 (as amended by Madras Acts, X of 1931 and V of 1932), motor vehicles in the Presidency are taxed in accordance with the schedule set out at Appendix 2, the amount collected as provincial tax during the year 1931-32 having been Rs. 29,69,073. One object of the provincial tax was to eliminate tolls which previously existed all over the Presidency and were objected to as bearing unevenly and being a hindrance and a nuisance. When the motor tax was imposed the intention was to compensate local bodies for the loss of toll revenue, but the revenue from the tax fell far short of the estimates having for the first year been Rs. 29·69 lakhs against an estimate of Rs. 66 lakhs. As a result local bodies are receiving only about one-third to one-half of their previous revenue from tolls at a time when their other resources have decreased, and they are now unable either on the one hand to maintain their roads or, on the other, to reduce the pre-existing fees for licenses to ply for hire which in some cases amount to a very large figure. This fee is assessed by various methods, *e.g.*, upon seating capacity, or upon seating capacity *plus* estimated daily milage, or upon weight or weight *plus* milage. In three districts the fee is more on certain routes than on others. The resulting fees in different districts for a 23 seater bus, assuming that it travels 100 miles per day, are given in Appendix 3. From this it will be seen that the fee varies from Rs. 400 in the Nilgiris to Rs. 2,300 in Ganjam, the Presidency tax being Rs. 690.

31. *Effect of depression and high taxation on motor buses.*—The recent reduction in the number of buses on the road is remarkable as the following figures will show:—

Number of motor buses which paid the Presidency tax.

Estimated originally	6,101
1st three quarters 1931-32	3,000
4th quarter 1931-32	2,491
1st quarter 1932-33	1,935

The effect of variations in the District Board fee on the reduction of buses on the road is illustrated by the following statement :—

District.	No. of buses.				Index figure 1929-30 =100.
	Fee.	1929-30.	1930-31.	1931-32.*	
Madura	400	441	470	401	91
Nilgiris	413	42	63	61	145
Salem	600	270	277	241	89
North Arcot . . .	690	200	182	170	85
East Godavari . . .	1,000	335	275	155	46
West Godavari . . .	1,822	72	57	40	55
Guntur	2,000	150	124	97	64
Kistna	2,186	194	167	111	57
Ganjam	2,300	67	70	62	92

* 1st three quarters.

It will be seen from the foregoing figures that with the exception of Ganjam the recent reduction in the number of motor buses on the road has been greatest in those districts where the district board license fee is highest. It is not suggested that the reduction in the number of vehicles is due solely to the existing high level of taxation, but it is obvious that when this reduction is due to a combination of economic circumstances, it must naturally be expected to be greatest in those places where the economic pressure upon the bus owner is highest. The Madras Branch of the Indian Roads and Transport Development Association who kindly submitted two memoranda and discussed their contents with us at considerable length have, we think, represented very fairly the case for the motor transport industry in respect of taxation in Madras in the memoranda and the discussion which we reproduce as Appendix 4. As explained therein a committee of the Legislative Council is now sitting to advise the Minister upon the whole question of motor vehicle taxation in the Presidency and may be expected to recommend some alleviation of the present position. We are, however, impressed with the difficulty of any permanent and equitable adjustment of taxes on motor transport for the purpose of road maintenance and development so long as the various authorities empowered to impose such taxation continue in watertight compartments and to act independently of each other, and in this connection we would conclude by referring to the analysis of the cost of running a 30-cwt. Chevrolet bus furnished us by the Association. The cost works out to annas 5·81 per mile ; *excluding* import duties on the vehicle and on tyres, parts and accessories, out of the total annual bill of Rs. 8,723, Rs. 1,882 represents taxes levied within the province and Rs. 750 is the amount collected by the Central Government through the petrol duty. The total taxes paid by this bus in one year, excluding the import duties already referred to, thus amount to

Rs. 2,632 which upon the annual milage taken in the analysis amounts to 1·75 annas per mile in taxes alone. In other words almost exactly 30 per cent. of the cost of running a 30 cwt. bus in Madras is due to the petrol duty and to miscellaneous taxes within the province.

31-A. *Rates of fare on buses.*—We enquired the rates of fare usually charged by buses and ascertained as follows: In Tanjore it is said to be about 6 pies per passenger-mile on roads parallel with railways and 8 pies to 10 pies elsewhere; in Trichinopoly about 4 pies on roads parallel with railways and 6 pies elsewhere; in Coimbatore it ranges between 3 pies and 5 pies with a maximum of 1 anna; in the Nilgiris it is 3½ pies for first class and 2½ pies for second class; in Chittoor 3 pies to 4 pies on routes parallel with railways and 6 pies elsewhere; in North Arcot 4 pies to 7 pies; in Kistna and West Godaveri about 6 pies; and in Guntur from 4½ pies where competition is keen to 8 pies elsewhere. We do not think that motor buses can be economically operated at a rate of fare below 4½ pies to 5 pies per passenger-mile and it seems that, where competition with the railway and otherwise is keen, buses are being operated below the economic limit.

31-B. *Suggestions for tighter control.*—We endeavoured to ascertain the opinion as to the need for closer control of motor buses in the interests of the travelling public and to protect the roads, and ascertained as follows: In Tanjore it was stated that further restrictions are unnecessary and that speeds are at present limited by the condition of the roads. In Trichinopoly there was some opinion in favour of running to time-tables and the issue of tickets. In Coimbatore it was stated that further restrictions were desirable in the matters of speed, the employment of efficient drivers, and the fixing of schedules of timeings; and that responsibility for accidents should be borne by the owners which would imply compulsory insurance against third party and passenger risks; there was also support for the idea of properly controlled monopolies. In the Nilgiris there were complaints regarding want of punctuality, the raising of rates of fare at festivals and other times of spate traffic, and overloading. In Chittoor there was a general feeling in favour of the enforcing of regular timings, control of speed and the prevention of solicitation of passengers in towns; there was also general opinion in favour of controlled monopolies and compulsory passenger insurance. In North Arcot the opinion was that the existing regulations are generally adequate. In Kistna, West Godaveri, and Guntur the opinion also was that the existing regulations are adequate if properly enforced; the number of buses plying on various routes are, it is to be noted, already limited in all these three districts.

Generally our impression is that, in the Madras Presidency, an improvement in bus services in the direction of greater reliability and punctuality is desirable and that this could largely be brought about by the restriction of the number of vehicles running on any route, or by partial monopolies, where this is not already practised. There is also general support for compulsory insurance against passenger risks.

31-C. *Zoning.*—We asked the following question: In view of the fact that the railways are public property and that it is in the interests of all concerned that they should operate efficiently and carry heavy goods at cheap fares, to what extent is it desirable that unlimited competition by motor transport should be permitted to damage the railways? And is it not possible to determine the appropriate field of motor and road transport and to confine each to its appropriate field? Motor buses are an undoubted advantage and in certain instances are, in competition with railways, so greatly superior that it would be out of the question to prohibit them; but where the service offered by the railway is comparable, it is perhaps wrong at this stage that motor buses should be allowed to compete without restriction. The question then comes to this: Up to what limit of distance is the bus so superior that it should not be interfered with? and would it be reasonable to restrict it by "zoning" to such a range? The answers we obtained to this question were as follows: In Trichinopoly the President of the District Board considered that competition on parallel routes by buses might be zoned to within 25 miles, but that within this zone railways should not be allowed by counter-competition to put the buses out of business.

In Coimbatore the Superintendent of Police thought that zoning within 25 miles would be an advantage, one reason being that, where long distance town to town services exist, buses are apt to run full leaving no room for passengers to join *en route*. The President of the District Board thought that on parallel routes zoning to within 35 miles might be suitable. The representative of the United Motor Services Co. pointed out that the distance between Coimbatore and Erode was 61 miles and that it would be wrong to prohibit bus services between these two towns. In general the opinion appeared to be that zoning to within some range of the order of 50 miles would be suitable.

In Chittoor the idea of zoning within a range of 50 miles was accepted. In North Arcot it was accepted that some system of zoning might be considered to be reasonable, say, up to about 50 miles and in Kistna, West Godaveri, and Guntur zoning to within 50 miles was accepted as being reasonable, and also because it would not affect existing services.

CHAPTER V.—BRANCH LINE PROJECTS.

A.—M. & S. M. Railway.

32. The M. & S. M. Railway provided us with full notes on the railway projects contemplated by that Administration during recent years and we give below brief comments on each of these :—

(1) *Cumbum-Kalahasti-Madras Railway.*—238 miles, metre gauge. This project contemplates a third line running north from Madras to develop the area bounded by the existing East Coast Railway between Madras and Bezwada and that part of the trunk line between Madras and Bombay running from Arkonam to Guntakul. A road would not be an adequate substitute for so long a line of railway, serving so wide an area.

(2) *Madras-Renigunta Railway.*—78 miles, metre gauge. The principal object of this project was to provide a direct link between the metre gauge system of the M. & S. M. Railway and Madras. Incidentally it was expected to develop a certain amount of suburban traffic to the North-West of Madras. The area to be traversed by this branch is already provided with roads, but this is not a case of a road being a possible alternative.

(3) *Rajahmundry-Sironcha (Balharshah) Railway.*—209 miles, 5′ 6″ gauge. This project was contemplated prior to the opening of the Balharshah-Kazipet line and the original justification for a railway between Rajahmundry and Sironcha has largely disappeared. The area to be served has no roads, but the country is sparsely populated and before even a road could be constructed a detailed survey would be necessary. No railway could be justified for many years to come.

(4) *Yerragudipad-Koilkuntla-Nandyal Railway.*—72 miles, metre gauge.

Ollapaliem-Singarayakonda-Kanigiri Railway.—47 miles, metre gauges.

Kavali-Udayagiri Railway.—52 miles, 2′ 6″ gauge.

Nellore-Kanigiri Railway.—93 miles, 5′ 6″ gauge.

In all these cases the Railway Administration considers and we agree that the provision of good feeder roads in lieu of the proposed railways would for the present adequately serve the area.

B.—South Indian Railway.

33. We give below brief comments on the projected railways contemplated by the South Indian Railway in the area served by that system :—

(1) *Pollachi-Vennanthurai Railway.*—15 miles, metre gauge It is sated that the goods traffic prospects of this line are satisfactory and that there is sufficient produce to justify the railway. It would serve

a planting district, and we understand that the planters are anxious to see the line constructed. On the other hand a road along the proposed railway alignment already exists, and, though it is in a bad condition, buses ply over it. We consider that this railway project should be further examined to see whether an improved road might not adequately meet the present needs.

(2) *Karaikkudi-Devakottai Railway.*—9 miles, metre gauge. The Railway Board have already pronounced the following opinion on this project :—

> " The Railway Board are not satisfied that the earnings anticipated in the traffic report submitted by you are likely to be realised .....because of the existing metalled road between Karaikkudi and Devakottai, upon which, presumably, there is an established motor service."
>
> " .....You will be asked to make a further traffic investigation of this project when the financial position improves to the extent that it will be possible for the Board to allot funds for its construction."

(3) *Theni-Periyakulam Railway.*—9 miles, metre gauge. This short line will, we understand, be expensive to work and a road already exists along the alignment.

(4) *Bodinayakkanur-Gudalur Railway.*—28 miles, metre gauge. This line will help to carry produce from a planting area and it is stated that there are sufficiently good prospects of merchandise traffic to make the line remunerative. A road, however, exists along the route.

(5) *Palamcottah (Tinnevelly)-Panakkudi (Nagercoil) Railway.*—31 miles up to Panakkudi, metre gauge. Mr. Izat remarked in connection with this project that it was required to develop Tuticorin Harbour and to open up a rich and densely populated tract of country at present only served by most indifferent roads. The proposed line stops short of Travancore State, and we understand the Travancore Durbar have raised objections to the construction. We consider that the possibility of improving the roads in this area might be considered, for we think the Travancore Durbar could not reasonably object to the improvement of existing roads.

(6) *Salem-Namakkal-Turaiyur-Trichinopoly Railway.*—85 miles, metre gauge. We understand that Namakkal is the most important place to be served by this railway, the alignment of which to some extent runs parallel with the broad gauge branch connecting Erode and Trichinopoly. Namakkal is connected with Salem by a road over which buses are already plying. The other place of importance to be served is Turaiyur, but this town too is already connected with Trichinopoly by a road over which buses are plying.

(7) *Karaikkudi-Melur-Madura Railway.*—51 miles (up to Madura Bridge), metre gauge. There is already a road with a heavy bus traffic between the points to be served by this project. The Railway Adminis-

tration, however, anticipates that the Periyar Dam irrigation will bring sufficient produce to this line to justify its construction.

(8) *Satyamangalam-Palni Railway* viâ *Tiruppur and Dharapuram.*—Direct route 94 miles, Kangayam route 110 miles, metre gauge. While we were in Madras Diwan Bahadur Gopalaswami, I.C.S., Secretary to the Government of Madras, Public Works and Labour Department, invited us to discuss this project with him. We understand that the local Government are anxious that the portion of this project between Tiruppur and Satyamangalam should be constructed, because they are contemplating damming the river Bhavani in the neighbourhood of the latter place and a railway will be necessary to assist in this work, as was necessary in connection with the Metur project. Tiruppur is served by the South Indian Railway broad gauge main line and to avoid transhipment at this point, the part of the line required by the Madras Government would have to be broad gauge. We understand that the Agent of the Railway has already informed the Madras Government unofficially that a broad gauge line between Tiruppur and Satyamangalam would probably enhance the estimate of this project by about 25 per cent. If the Bhavani dam is to be constructed it would appear that a road would not serve the purpose of this railway, at any rate, between Tiruppur and Satyamangalam.

(9) *Satyamangalam-Mettupalaiyam Railway.*—29 miles, 5′ 6″ gauge. The prospects of this railway are very poor and we were informed by the South Indian Railway that there was no likelihood of there being sufficient traffic even to justify a motorable road.

(10) *Tanjore-Pattukkottai Railway.*—28 miles, metre gauge. Along the alignment of this railway there is already a road with bus traffic, but with recently developed irrigation a new area of cultivation is to be brought into existence, and it is considered that this would bring sufficient goods traffic to justify the construction of the line.

(11) *Kollengode-Trichur Railway.*—40 miles, metre gauge. The only object of this line would be to provide a metre gauge link with Cochin Harbour after the Shoranur-Cochin line has been converted to broad gauge. The Railway Board, however, have stated that this line cannot be justified as for the part of the distance it would be parallel to the broad gauge railway at a distance of only about 20 miles. The question of a road in lieu of this line hardly arises.

(12) *Virudhunagar-Arruppukkottai Railway.*—12 miles, metre gauge. The Railway Board reviewing this line considered that it could not be remunerative. There is already a road along the alignment with a bus service plying over it.

(13) *Arantangi-Karaikkudi Railway.*—16 miles, metre gauge. The object of this short line is to provide a link between Arantangi and the line running from Trichinopoly to Manamandurai. A road would not serve the purpose of this short railway connection.

(14) *Manamandurai-Maniyachi/Tuticorin Railway.*—69 miles, metre gauge. This connection was considered by Mr. Izat as being most urgently required. A road would not serve the purpose.

(15) *Ariyalur-Jayankondacholapuram Railway with extension to Madanathur.*—30 miles, metre gauge. We were informed that this project might be reinvestigated as there were grounds for considering whether a road would not serve the purpose.

(16) *Cuddalore-Pondicherry Light Railway.*—15 miles, 2′ gauge. A road already exists with heavy bus traffic on it. In these circumstances there would hardly be justification for constructing a light railway of 2′ gauge between these points especially as it would involve the difficulties of a break of gauge.

(17) *Mangalore-Udipi (Malpi) Railway.*—40 miles, coastal route, 62 miles inland route. 5′ 6″ gauge. This line is never likely to be constructed owing to its very high cost of construction and poor prospects. A fully bridged road would be an adequate substitute but would also be expensive to construct.

(18) *Peravur-Makut Railway.*—20 miles, metre gauge. This project has been considered by the Railway Board as unremunerative and has been deferred for the present as a road already exists between Makut, Cannanore and Tellicherry.

(19) *Satyamangalam-Hardanahali (Mysore Frontier) Railway.*—45 miles, metre gauge. The principal object of this line is to provide a metre gauge connection between the Mysore Railways and the metre gauge system of the South Indian Railway, and accordingly a road would not serve as a substitute. The railway alignment, however, crosses the ghats and the cost of construction is very high, and it is, therefore, not likely to be undertaken for some years to come.

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

34. *Absence of programme.*—As already stated there are very few roads in charge of the Public Works Department, the majority being in charge of local bodies, and, with the exception of schemes to be financed from the road development account or from provincial grants from time to time as available, which are selected from demands made by local bodies, there is in existence no comprehensive scheme of road development for the Presidency as a whole. From our discussions with Mr. Conran Smith, Secretary, Local Self-Government Department, district officers and the presidents and other representatives of local bodies we gathered that the advantages of a comprehensive and co-ordinated plan of future development are generally recognised. Such a plan appears to us to be necessary in order that a definite policy may be steadily pursued and that the schemes likely to be undertaken may be known sufficiently long in advance to allow of the careful preparation of designs and estimates. In particular wherever the programme includes, as it must necessarily do, a very considerable amount of bridging, it is highly desirable that it should be decided upon as far in advance as possible in order that adequate time may be allowed to study the records or make observations regarding flood discharges.

Moreover, we consider that the railway administrations serving the Presidency should be consulted during the framing of such a comprehensive scheme as we have in view, and be allowed adequate time for consideration.

35. *Needs of typical districts.*—In our visits to different districts in the Presidency we usually asked to be told what was felt to be the greatest need of the district in the matter of road communications. The replies indicate the directions in which road development is likely to be demanded when conditions improve, and the form which a comprehensive plan might take, and we will briefly refer to the impressions which we gathered in this manner. Before doing so, however, we must refer to two general *desiderata*. We have in our description of the general conditions of communications in the Presidency referred to the present inadequate provision for maintenance and to the fact that, even before the recent unfortunate loss of toll revenue, the maintenance of existing roads under increasing traffic from existing resources was becoming more and more difficult. There is also a great need for the surface treatment of a considerable mileage of water bound macadam in the interests of public health and safety, to which also we have already referred. Thus, before any great expenditure can be incurred upon additional road facilities, the needs of existing roads in these two respects must first be considered. Unfortunately, if our impressions are correct and there has been substantial recent deterioration of existing roads

owing to enforced neglect, a very considerable bill for reconstruction may accumulate which also must be a prior claim on any additional provision for roads.

(*a*) *Tanjore.*—The greatest need here is said to be the provision of a hard surface to about 500 miles of important earth roads, because, much of the country being saturated or under water for a considerable part of the year, there is little or no prospect of improving earth roads as such.

(*b*) *Trichinopoly.*—Here it was stated that the greatest needs are the provision of more bridges; certain new feeder roads, particularly to the stations on the new Villupuram-Trichinopoly line; and the raising in class to class I or trunk roads, of the road to Chidambaram and that from Trichinopoly to Salem.

(*c*) *Coimbatore.*—The greatest need of the district was stated to be the opening up of new roads as follows:—

(1) Burghur Ghat Road—Bhavani *viâ* Chellampalayam, 43 miles, estimated cost Rs. 2 lakhs, including some small culverts.

(2) Bailur to Geddesal—13 miles in the Eastern Ghats.

(3) Mangarai to Thadagam—10 miles.

In addition it was stated that there are 237 villages with a population of 1,000 and over which are not on any metalled or unmetalled road and that the length of new roads necessary to connect these would be about 1,200 miles and the cost Rs. 650 per mile. Further the improvement of earth roads to a standard above that at present prevalent would be possible if more funds were available.

(*d*) *Nilgiris.*—In the Nilgiris we were told that the greatest need is the improvement of existing metalled and unmetalled roads and that a sum of Rs. 25 lakhs would be required for this. In addition there is a demand for the improvement and regrading of the Kotagiri Ghat Road as an alternative to the Mettupalaiyam Ghat Road which is subject to frequent interruption by land slips. The question of providing link roads to railway stations is not of general importance in the Nilgiris, but we understand that the South Indian Railway wish to have four of the stations on the Nilgiri Railway connected with the Ghat Road. Finally there are about 20 villages with a population of 1,000 and over which are not on any metalled or unmetalled road and to connect which would require some 100 miles of new road. The absence of such roads is said to be a serious disability in certain cases, but the connection to many villages must remain by pack traffic for many years.

(*e*) *Chittoor.*—In Chittoor there has been a considerable development in recent years in the direction of providing adequate link roads with villages. In 1920 the District Board embarked upon a 7 lakh scheme for the provision of 350 miles of village roads of about 20 ft. formation width, but more money is necessary to complete this scheme. The District Board is as elsewhere hampered by lack of funds for the

maintenance of Class II roads and urges the reclassification of one or two Class II roads as Class I. As illustrating the effect upon the maintenance of Class II roads of the present depression it was stated that, in order to earn the Government grant of Rs. 43,000 for the maintenance of Class II roads, the District Board is now with difficulty spending an equivalent sum or Rs. 86,000 in all. Actually however before the present depression and the failure of the motor tax revenue, the District Board was spending Rs. 1,20,000 a year on these roads.

(*f*) *North Arcot.*—The greatest need of the district was stated to be as follows :—

	Rs. lakhs.
(*a*) Reconstruction of the Vellore bridge	8·5
(*b*) Construction of the Tiruvalam bridge (Pennai river)	6·5
(*c*) Realigning and improving the road between (*a*) and (*b*)	1·0
(*d*) Widening roads on tank bunds	1·0
(*e*) Strengthening of the railway bridge at Katpadi	..
(*f*) Improvements to the I, II Class roads	4·0
(*g*) Construction of 5 causeways	4·0
(*h*) Construction of village roads	10·0
	35·0

There is also considerable possibility of improving the standard of unmetalled roads if more funds are available. The requirements quoted are not exhaustive and it appears that a comprehensive survey would be desirable in this case also.

(*g*) *Kistna.*—In this district there is a keen demand for improvements, but we were unable to discover any definite agreement as to the most urgent needs. The district is divided into two main divisions, deltaic and upland, and while a number of schemes for the provision of feeder roads in the delta were suggested to us there was, on the other hand, a considerable demand for the improvement of communications in the uplands where the improvement of unmetalled roads is possible at a comparatively low cost. The absence of adequate communications to villages and the need for more bridges was also referred to. It is clear that this is a case for a comprehensive survey.

(*h*) *West Godavari.*—The greatest needs are said to be the improvement of existing unmetalled roads, metalling and bridges, and village communications. A list of bridge projects amounting to a total of Rs. 19½ lakhs was supplied to us. It is also stated that there are 20 villages of a population of 1,000 and over which are not situated on any road maintained by public authority, to connect which 57 miles of link roads would be necessary. It was stated that the improvement and maintenance of unmetalled roads would be quite possible with increased resources.

(*i*) *Guntur.*—The President of the Guntur District Board furnished us with a very complete and interesting statement covering the whole

field of our enquiry in respect of that district. In the brief space and time at our disposal we are unable to do justice to this information which will be most useful when the framing of a comprehensive programme is taken up. The principal needs of the district appear to be, briefly, the metalling of 300 miles of unmetalled roads in the deltaic taluks of Tenali, Repalli and Bapatla and the opening up of new roads to afford access to inaccessible areas, a list of necessary roads being furnished to us and amounting to many hundred miles. There are stated also to be 417 villages of 1,000 population and over, out of a total of 679 villages of that size, which are not on any public road and which would require some 1,250 miles of new road to connect them.

36. *Feeder roads and new roads required by Railways to develop unserved areas.*

A. *M. & S. M. Railway.*—The M. & S. M. Railway furnished us with a summary giving particulars of new roads required by that railway to open up areas, and act as feeders to the railway, and roads required to connect stations with the existing road system. This summary is printed as Appendix 5, but the M. & S. M. Railway emphasize the fact that the summary is by no means exhaustive. The Administration considers the matter of very great importance and suggests that before any action is taken on the list submitted, a traffic survey of the country served by the railway should be undertaken by the authorities responsible for road construction in conjunction with the railway to enable a proper programme of road development to be drawn up. We are strongly of opinion that this recommendation of the M. & S. M. Railway should be followed, as we think it is one of the most important steps towards the co-ordination of road development with railways. In some instances the M. & S. M. Railway have been able to give the milage of the roads required; in others the milage is not given, so that it is not possible to give an approximate estimate of the milage of new roads required. The summary, however, shows that if the railway is to be helped fully by road development there is a very considerable amount of work to be undertaken.

B. *South Indian Railway.*—The South Indian Railway have also furnished us with a list of roads required to connect railway stations with the existing road system (Appendix 6), but, as recommended by the M. & S. M. Railway, we consider that a comprehensive survey should be made between the railway and the local officials to ascertain exactly what roads are required and the order of urgency, before any further steps are taken.

We reproduce the lists furnished by the two railways because we wish to emphasize what a large scope there is for road construction to feed traffic to railways, and we are clear that this matter should be dealt with as part and parcel of a comprehensive survey and plan.

37. *Opinion of the Madras Government in regard to feeder roads to railways.*—The Madras Government recently addressed the Government

of India on the subject of feeder roads to railways in the following terms :—

> " In the Madras Presidency several new Railway lines have been opened, *e.g.*, the Guntur-Macherla Railway, the Gudivada-Bhimavaram Railway, the Dindigul-Pollachi Railway and the Virudhunagar-Tenkasi Railway. The question was raised as to whether the responsibility for constructing feeder roads linking stations on these new lines with existing local funds roads should rest on the local authority or on the Railway administration concerned. Under the enactments governing the Administration of local authorities, they cannot be compelled to construct such roads. The local authorities have invariably refused to undertake their construction and have contended that it is the business of the Railway administration to do so. As both the Railway and local authorities have a joint interest in the matter, it was suggested as a compromise that the Railway administration should construct the roads in the first instance and that the local authority should undertake their upkeep after construction. The decision of the Railway Board given in this connection was to the effect that Railways should construct the roads inside the Railway premises only. The obvious result is that traffic facilities will tarry and the newly constructed Railways will lose much of their potential usefulness to the public and the consequent advantage to the Railway. This question thus appears to require further consideration ".

The Madras Government suggested that this question might well be put in the agenda for the Road Conference, but there has not been a suitable opportunity of discussing the subject. We consider the matter an important one and hope to refer to it again in the general part of our report.

38. *Local and Municipal Engineers' Association.*—We also had the advantage of a general discussion with representatives of the Local and Municipal Engineers' Association of Madras. The Association represented to us the immense extent of the developments required in many directions and the necessary preliminary of completing or improving existing metalled roads to a uniform standard and emphasised that strengthening and improvement should be carried out with due regard to economy and to the provision of maximum service to the public for the minimum outlay. The Association is strongly in favour of the undertaking of a comprehensive survey for the whole Presidency based on an adequate traffic census, as a preliminary to any future programme of development, improvement, or the strengthening of existing roads. The Association also drew attention to the increased expenditure which will be necessary to repair the present enforced neglect

of metalled roads due to the loss of revenue by the abolition of tolls and the substitution of a provincial motor vehicle tax.

39. *Conclusion.*—Our general conclusion is that extensive as the road system of the Madras Presidency already is, there is room for great improvement and all round development on a comprehensive plan. We think that there can be no question that further improvement and development are necessary and that, if these are to proceed on rational lines, they should be preceded by a comprehensive survey of all requirements under the direction of a provincial Board of Communication or some co-ordinating authority, upon which the railway interests should be adequately represented.

CHAPTER VII.—SUMMARY OF CONCLUSIONS.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

40. 1. Madras possesses a large milage of metalled roads, mostly maintained by District Boards who are subsidized by the local Government (paras. 4 and 5).

2. Recently a Village Development Fund has been established, one object of which is to improve village communications (para. 6).

3. About 3,000 miles of improved unmetalled roads exist in the Presidency (para. 7).

4. The bulk of the expenditure on roads is classified as 'local', but this is due to 95 per cent. of the metalled roads being in the charge of the District Boards who are subsidized by the Government (para. 8).

5. On the whole, the Presidency is well served by road communications; the railway mesh, though not as fine as in some other parts of India, is fairly adequate, having regard to the considerable areas of sparsely populated territory in the Presidency (paras. 9, 10 and 11).

6. Though the milage of metalled roads is high compared with the area served, they are suffering from rapid deterioration owing to lack of funds. Motor transport demands the improvement of many roads; and especially surfacing in important towns and villages (para. 11).

7. Bridges and causeways are badly needed to link up road connections (para. 12).

7-A. The saving in the cost of carriage by bullock cart over a good road as compared with a bad is substantial. There are many large villages not at present on any public road. To link these up with passable roads would require very heavy expenditure, but the matter is one that needs consideration (paras. 12A and 12B).

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

8. Out of a total railway milage of 4,377 about 2,681 miles have a metalled road running parallel and within 10 miles of them. The local Government has devoted most of its share of the Central road development account to the provision of bridges, causeways, and certain missing links on trunk routes, the majority of which are parallel with the railways in the Presidency; a railway milage of 1,360 miles is liable to be affected (para. 13).

A.—*M. & S. M. Railway.*

9. The M. & S. M. Railway reports considerable motor competition particularly in the Delta districts on the East coast. The railway estimates its annual losses in the Presidency at about Rs. 16 lakhs (paras. 15 and 16).

10. The railway is meeting the competition chiefly by rearranging its time table. It has also under contemplation running of light trains (para. 18).

11. The railway complains of the unfair incidence of the Pilgrim Tax and has addressed the local Government on the subject (para. 19).

B.—*South Indian Railway.*

12. The railway reports considerable motor competition and its annual losses on this account may perhaps be placed at Rs. 13½ lakhs. The railway is meeting motor competition by :—

(*a*) The introduction of cheap tickets, and

(*b*) Extra trains.

(paras. 21-23).

13. The railway has largely eliminated motor competition in the suburban areas South-West of Madras by its recent electrification scheme which has virtually involved the construction of 18 miles of railway and the electrification thereof (para. 24).

14. The duplication and electrification of the South Indian Railway suburban lines in the neighbourhood of Madras emphasizes how limited is the capacity of a single line for dealing with a small number of passengers at frequent intervals (para. 25).

15. The railway complains of the unfair incidence of Pilgrim Tax which is collected from railway passengers and not from bus passengers (para. 26).

C.—*Bengal Nagpur Railway.*

16. The Bengal Nagpur Railway reports a number of competitive bus services in the extreme north-east area of the Presidency and estimates its annual loss at about Rs. 1½ lakhs (paras. 27 and 28).

17. The organization of the motor transport business has made considerable advances in some districts of the Madras Presidency and we were able to visit the head quarters of one such organization which appears to be run on successful lines and is competing with the neighbouring railway (para. 29).

18. At the meeting we attended at Vellore one of the delegates questioned the advisability of permitting railways to use their resources to stifle motor competition and asked why railways should not themselves operate motor transport (para. 29A).

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION.

19. Road tolls have recently been abolished and only motor vehicles are taxed. This has resulted in a serious loss of revenue and local bodies have not adequate resources for maintaining roads (para. 30).

20. On the other hand, local bodies have imposed very heavy taxation on motor buses in the guise of fees for license to ply for hire, the effect of which has been considerably to reduce the number of these vehicles. The local Government are appointing a committee to investigate the question of taxation. The petrol duty and taxes within the province are responsible for 30 per cent. of the cost of running a rural bus (para. 31).

20A. The rates of fare charged by motor buses are generally remunerative, but where there is competition these are often cut below the level at which there is adequate return to cover all charges including depreciation and renewal (para. 31-A).

20B. There is in the Presidency a body of opinion favouring more control of motor buses, the restriction of the number allowed on any route and compulsory insurance of passenger risks. There is also some support for properly controlled monopolies as tending to provide a more efficient service (para. 31B).

20-C. Zoning of motor transport in competition with railways to some such range as 50 miles finds support. The precise range would be a matter for consideration in individual cases. Within zones of motor transport, it is suggested, expenditure of public funds on counter competition by railways should be carefully scrutinised (para. 31C).

Chapter V.—Railway Branch Line Projects.

21. The projects of the M. & S. M. Railway can be summarized as follows :—

(i) *Projects where a road would not be an adequate substitute.*

Cumbum-Kalahasti-Madras Railway.

Madras-Renigunta Railway.

(ii) *Projects where a road would adequately serve the area.*

Yerragudipad-Kolikuntla-Mandyal.

Ollapaliem-Singarayakonda-Kangiri.

Kavali-Udayagiri Railway.

Nellore-Kanigiri Railway.

(iii) *Projects where a railway cannot be justified.*

Rajahmundry-Sironcha (Balharshah) Railway (para. 32).

B.—*South Indian Railway.*

(i) *Projects where a road exists or where a road would adequately serve the area.*

Karaikkudi-Devakottai Railway.

Theni-Periyakulam Railway.

Salem-Namakkal-Turaiyur-Trichinopoly Railway.

Virudhunagar-Arruppukkottai Railway.

Cuddalore-Pondicherry Light Railway.

(ii) *Projects where goods traffic is expected justifying the construction of railway though a road may exist.*

Pollachi-Vannanthurai Railway.

Bodinayakkanur-Gudalur Railway.

Karaikkudi-Melur-Madura Railway.

Tanjore-Pattukkottai Railway.

(iii) *Projects which should be re-examined, to see whether a road would not serve the purpose.*

Palamcottah (Tinnevelly)—Panakkudi (Nagarcoil) Railway.

Ariyalur-Jayankondacholapuram Railway with extension to Madanathur.

(iv) *Projects which may be taken up when funds permit.*

Satyamangalam-Palni Railway *viâ* Tiruppur and Dharapuram.

Arantahgi-Karaikkudi Railway.

Manamandurai-$\frac{\text{Maniyachi}}{\text{Tuticorin}}$ Railway.

(v) *Projects which may be abandoned.*

Satyamangalam-Mettupalaiyam Railway.

Kollengode-Trichur Railway.

Mangalore-Udipi (Malpi) Railway.

Peravur-Makur Railway.

The Satyamangalam-Hardanahali (Mysore Frontier) Railway may be required in the future as a through connection.

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

22. We consider there is great need for a comprehensive co-ordinated plan of future road development and this should be drawn up in consultation with Railway Administrations (para. 34).

23. All the district Boards interviewed produced a long list of urgent needs in the way of road development (para. 35).

24. Both railways produced lists of feeder and link roads required in the area served by them. A large amount of work requires to be done in this direction (para. 36).

25. The Madras Government have referred the question of the financing of feeder roads to railways to the Government of India and this question still has to be decided (para. 37).

26. The Local Municipal Engineers' Association whom we consulted in Madras is strongly in favour of a comprehensive road survey being undertaken in the whole Presidency and we consider this should be directed by a provincial Board of Communications on which railway administrations should be adequately represented (paras. 38 and 39).

APPENDIX 1.

Particulars in respect of area, comprised in districts having a population density of 100 per square mile and over. As there is no district having a less area these particulars are in respect of the whole Presidency.

Area	122,620 square miles.
Population	46,740,107
Average density	382 persons per sq. mile.

Roads and Railways.

——	Length in miles.	Length per 100 square miles of area.	Area per mile of road or railway in square miles.	Persons per mile of road or railway.
1. Railways	4,377	3·56	28·00	10,700
2. Metalled roads * . . .	23,415	19·15	5·23	1,950
3. Improved or motorable unmetalled roads.	3,711	..	..	..
4. Total motorable roads . .	27,126	22·10	4·52	1,720
5. Other unmetalled roads . .	5,754	..	..	..
6. Total all roads . . .	32,880	26·80	3·73	1,420

The area more than 10 miles from any railway is 71,577 square miles or 58 per cent. of total area.

* Includes gravel and laterite roads.

APPENDIX 2.

Schedule of Provincial Motor Vehicle Taxation in Madras.

Class of vehicles.	For vehicles fitted with pneumatic tyres. Quarterly tax.			For other vehicles. Quarterly tax.		
	Rs.	A.	P.	Rs.	A.	P.
1. Motor cycles (including motor-scooters and cycles with attachment for propelling the same by mechanical power) not exceeding 8 cwt. in weight, unladen—						
(*a*) Bicycles	7	8	0	10	0	0
(*b*) Bicycles if used for drawing a trailer or side-car	10	0	0	12	8	0
(*c*) Tricycles	10	0	0	12	8	0
2. Motor vehicles not exceeding 5 cwt. in weight unladen, adapted and used for invalids . . .	7	8	0	10	0	0
3. Motor vehicles used solely in the course of trade and industry for the transport or haulage of goods or materials including tricycles weighing more than 8 cwt., unladen—						
(*a*) Vehicles not exceeding 15 cwt., in weight, unladen	75	0	0	100	0	0
(*b*) Vehicles exceeding 15 cwt., but not exceeding 30 cwt. in weight, unladen . . .	125	0	0	160	0	0
(*c*) Vehicles exceeding 30 cwt., but not exceeding 50 cwt. in weight, unladen . . .	200	0	0	250	0	0
(*d*) Vehicles exceeding 50 cwt., but not exceeding 70 cwt. in weight, unladen . . .	225	0	0	280	0	0
(*e*) Vehicles exceeding 70 cwt., but not exceeding 100 cwt. in weight, unladen . . .	250	0	0	320	0	0
(*f*) Vehicles exceeding 100 cwt. in weight, unladen	275	0	0	360	0	0
(*g*) Additional tax payable in respect of such vehicles used for drawing trailers—						
(i) for each trailer not exceeding 1 ton in weight, unladen . . .	60	0	0	85	0	0
and (ii) for each trailer exceeding 1 ton in weight, unladen . . .	125	0	0	160	0	0

Provided that two or more vehicles shall not be chargeable under this clause in respect of the same trailer.

Class of vehicles.	For vehicles fitted with pneumatic tyres.			For other vehicles.		
	Quarterly tax.			Quarterly tax.		
	Rs.	A.	P.	Rs.	A.	P.
4. Motor vehicles plying for hire and used for the transport of passengers—						
(*a*) vehicles licensed under the Madras Motor Vehicles Rules, 1923, to carry in all not more than four persons	30	0	0	45	0	0
(*b*) vehicles licensed under the Madras Motor Vehicles Rules, 1923, to carry more than four persons—for every person which the vehicle is so licensed to carry . . .	7	8	0	12	0	0
5. Motor vehicles other than those liable to tax under the foregoing provisions of this schedule—						
(*a*) Weighing not more than 15 cwt., unladen .	17	8	0	25	0	0
(*b*) Weighing more than 15 cwt., but not more than 30 cwt., unladen	25	0	0	37	8	0
(*c*) Weighing more than 30 cwt., but not more than 45 cwt., unladen	32	8	0	50	0	0
(*d*) Weighing more than 45 cwt., but not more than 60 cwt., unladen	40	0	0	60	0	0
(*e*) Weighing more than 60 cwt., unladen . .	50	0	0	75	0	0
(*f*) Additional tax payable in respect of such vehicles used for drawing trailers—						
(i) for each trailer not exceeding one ton in weight, unladen . .	10	0	0	15	0	0
and (ii) for each trailer exceeding one ton in weight, unladen . . .	20	0	0	30	0	0
Provided that two or more vehicles shall not be chargeable under this clause in respect of the same trailer.						

APPENDIX 3.

Statement showing the licence fee levied by district boards on a 23 seater bus (for 100 miles).

Serial No.	Name of District Board.	Amount of licence per annum.
		Rs.
1	Anantapur	1,000
2	North Arcot	690
3	South Arcot	.. Rates according to routes.
4	Bellary	1,000
5	Chingleput	1,500
6	Chittoor	1,140
7	Coimbatore	575
8	Cuddapah	920
9	Ganjam	2,300
10	East Godavari	1,000
11	West Godavari	1,822
12	Guntur	2,000
13	South Kanara	1,520
14	Kistna	2,186
15	Kurnool	960
16	Madura	400
17	Malabar	905
18	Nellore	1,140
19	Nilgiris, the	414
20	Ramnad	1,020
21	Salem	600
22	Tanjore	.. Rates according to routes.
23	Tinnevelly	759
24	Trichinopoly	.. Rates according to routes.
25	Vizagapatam	1,093
	Average	1,130

APPENDIX 4.

Notes on discussion with the Madras Branch, Indian Roads and Transport Development Association on 20th September 1932.

1. The Association put in two written memoranda.

2. Regarding the proposal for "zoning" of motor bus services parallel with railways to within a range of about 50 miles, the Association were of opinion that the idea could be accepted in principle but that possibly a range of 50 miles was too short, and that in any event the precise distance should be determined on consideration of the merits of each case subject always to the proviso that the alternative railway service is a reasonable one. The decision in doubtful cases should vest in some body upon which all interests should be adequately represented. If such bodies were created for certain areas within a province they should be linked with and possibly be subordinate to the provincial Boards of Communications.

3. With respect to goods traffic on roads the Association agreed that some system of zoning to prevent unhealthy competition would be desirable but that particular exceptions should be made, *e.g.*, in the case of milk, fruit, and other perishable goods or goods of a special nature. The principle is the same as in the case of bus traffic and is that each case should be considered on its merits in the light of the facilities afforded by the railway for that particular class of traffic.

4. The Association consider that the number of motor buses allowed to ply on any route should definitely be limited by or on the advice of the bodies above suggested to the number necessary for the development of that route.

5. Regarding monopolies the Association were of the opinion that, provided the number of buses plying on any route is regulated, and that adequate arrangements are made in respect of control and, *e.g.*, telescopic time-tables, monopolies are undesirable as a general proposition although in certain special cases (such as the development of a new route which might otherwise be unattractive) they might be of advantage for a limited period. The granting of monopolies should in the opinion of the Association be subject to the general control of the provincial Board of Communications. The Association were further of the opinion that in this matter regard should be had to the desirability of bringing into the motor transport business more reputable firms of substance which would among other things facilitate mutual arrangements with the railways for the interchange of traffic.

6. The Association urge very strongly that the present basis of taxation of motor transport in the province is unfair, as owing to the abolition of tolls and the substitution therefor of a provincial motor vehicle tax the revenue previously collected from all road transport is now levied on motor transport only to the relief of the bullock carts. They also point out that owing to a miscalculation the revenue from the taxation of motor transport is less than one half of the estimated amount, with the result that District Boards have been deprived of about two-thirds this revenue upon which they depended largely for the maintenance of roads and that roads are rapidly deteriorating.

7. The Association strongly urge that bullock carts should again be made to contribute to the maintenance of roads either by the reimposition of tolls for non-motor traffic only or by means of provincial taxes on carts actually using the road. The general principle being that all users of roads should pay their fair share, the Association draw attention to the fact that bullock carts greatly outnumber motor vehicles and that they do very great damage to the roads. In the case of motor transport taxation is levied to some extent according to the damage done to roads the measure being petrol consumption, weight or carrying capacity, and tyre equipment. A similar principle should be followed in the case of bullock carts and taxa-

tion of these should be in accordance with the damage they do to the roads or roughly in the inverse ratio of tyre widths. This would encourage the introduction of wider tyres doing less damage to roads.

8. The Association also wish to draw attention to the present indiscriminate taxation of transport by various authorities central, provincial, and local, each largely without regard to what the others are doing; and particularly to the fact that practically none of the receipts from central taxes on motor transport are applied to roads, although the road burden falls entirely upon provincial and local finances.

MEMORANDUM I.

Submitted to the Road, Rail Enquiry Committee by the Indian Roads and Transport Development Association, Ltd., Madras Branch, on September 20th, 1932.

SUBJECT.—TAXATION OF ROAD TRANSPORT IN SOUTH INDIA.

Foreword.—Prior to the introduction of the Madras Motor Vehicles Taxation Act on the 1st April 1931 motor transport was taxed as follows:—

(*a*) Private cars and motor cycles by municipal taxes and principally by tolls.
(*b*) Motor lorries by license fees and by tolls.
(*c*) Buses by license fees and by tolls. Tolls in these cases were in many districts compounded.

Tolls were operated by Municipalities and by District Boards.

Bullock carts and other users of the road were taxed by Municipalities and District Boards by means of tolls.

The objection to tolls for fast moving traffic was the inconvenience of delays and the unfairness of such taxes in cases where many private owners, who did not tour, paid practically no taxation whatever. The number of tolls also was being steadily increased by Municipalities and District Boards and there seemed to be but little real control over their activities in this connection.

Madras Motor Vehicle Taxation Act of 1931.—This Act removed tolls completely and substituted a provincial tax based on the weight of private cars and taxis, on the unladen weight of lorries and on the seating capacity of buses. From the preamble to the Act, it is obvious that the intention of this Act was that it should be the one basis of taxation. From the view point of the motor trade, as well as users and operators of motor vehicles, this Act had two principal defects—

(*a*) It did not control or prohibit the continuance of the levying of excessive license fees on vehicles plying for hire by District Boards.
(*b*) It lost most valuable revenue, for the purpose of maintenance of roads, which had been derived from the payment of tolls by bullock carts and vehicles other than motor vehicles.

The first defect in the Act, *e.g.*, (*a*) (*see* above) has resulted in dual taxation of all mechanical transport except private cars. After many representations to Government, the District Board license fees were reduced to a minimum in the case of lorries not plying for hire, but such has not been achieved in the case of buses. The average license fee to-day in Southern India of a 23 seater bus operating 100 miles per day is Rs. 1,100 per annum (the provincial tax in addition to this on the same bus would be Rs. 690 per annum).

The second defect in the Act was a very serious one from a revenue point of view. It is estimated that at least Rs. 25 to 30 lakhs was lost from bullock cart taxation revenue, and the unfairness of the whole thing is that bullock carts are at present

using the roads and helping to wear them out without paying anything for their use in District Board areas; in many Municipalities a small registration and/or license fee is levied. It is believed that the reason that this valuable revenue was dropped was a political one, and ostensibly it was an endeavour to reduce the burden on the alleged poor agriculturist.

The present Position.—It would be futile to suggest that the tremendous drop in the numbers of motor vehicles, especially those plying for hire, in the Presidency has not been partially caused through economic depression. But, on the other hand, it must be admitted that ridiculously high taxation is even harder to bear and to pay in times such as these than it would be in more prosperous times. The combination of high taxation and general depression has driven a very high percentage of buses and trucks off the roads. The attached leaflet, No. 1, clearly shows the present position. It is the contention of distributors of motor transport and operators that Government are definitely losing revenue due to excessive taxation which it is impossible for bus owners to bear. It is contended also that a substantial reduction in taxation would mean a steadily increasing number of buses and trucks on the roads and eventually an increase in the total revenue.

Some small relief has been agreed to by Government in the case of certain types of motor transport. Firstly vehicles using private roads only are exempt from provincial tax. Then trucks not plying for hire are only now obliged to pay a nominal District Board License Fee. Then again, a certain relief has been afforded to trucks not plying for hire in that the schedule of weights has been revised and in some cases the taxation has been reduced. In particular, under this schedule, small light delivery vans have been encouraged by lower taxation. It is hoped that these reclassifications will tend to, at least, stop lorries from being taken completely off the roads. The absurdity of it is that if a lorry is taken off the roads, the revenue from it is completely lost,—for the bullock cart which carries the goods in its place contributes nothing to revenue. Attached is schedule No. 2 showing the taxation of motor lorries under the Act and subsequently under the new Amendments.

The Work of the Legislative Council Committee.—A Committee has been sitting for some time examining the whole question of Motor Transport Taxation. Any possibility of substantially reducing excessive taxation on transport, and, in particular on buses, has, of course, been made very much more difficult because of the difficulty that District Boards and Municipalities find in balancing their Road Budgets due to the smallness of the available contribution made by the Madras Government to them, from the returns from the Madras Motor Vehicles Taxation Act. This Act was based upon erroneous figures (particularly as, we understand, it was assumed that every motor vehicle ever registered, remained on the road) and, in addition the Rs. 25 and more lakhs lost from bullock cart taxation has made it impossible for motor transport to furnish the whole of the revenue necessary for maintenance.

A broad principle on which a portion of the Committee is endeavouring to work is that one consolidated tax is better than provincial tax and license fees. It is believed that one collecting agency is better than two. The latest suggestion put up by a sub-section of the existing Committee is that District Board License Fees shall be limited to a maximum on buses of Rs. 100 per annum, and that they shall be regarded as a fee for purposes of control rather than of revenue. It is further considered that to compensate for loss from existing license fees, that the taxation on motor buses should be raised from the present scale of Rs. 7-8 per seat per quarter to approximately a maximum of Rs. 12-8 per seat per quarter. Whether this will, or can, be agreed to by Government remains to be seen but such is the present position and if such a revision can be brought about it would afford some relief to bus operators and may be the means of preventing further large numbers of revenue paying buses going off the roads.

It is needless to point out how absurdly high the total taxation on motor transport is in this Presidency for the case has been clearly presented in the attached memorandum to the Chief Minister.

The roads of the Presidency are in a deplorable condition. Revenue must be raised for the construction and maintenance of roads. All users of the roads must pay their fair share, and the bullock carts must once again contribute towards the cost of maintaining the road facilities which they use; motor transport can no longer subsidise bullock cart transport.

HIGH TAXATION DRIVES BUSES AND LORRIES OFF THE ROAD.

The Annual Provincial Taxation on a 23-seater Bus in—	Actual figures in Madras Presidency Buses.	
Madras Presidency is Rs. 690*	Estimated number running at commencement of year 1931-32	6,101
Behar and Orissa is Rs. 232.	Actual number running in the first 3 quarters of 1931-32	3,000
Central Provinces is Rs. 200.	Actual number running in the fourth quarter of 1931-32	2,491
Punjab is Rs. 125.	Actual number running in the first quarter of 1932-33	1,935
Bengal is Rs. 120.		
Bombay is Rs. 120.	*Commercial Lorries.*	
United Provinces is Rs. 60.		
Baluchistan is Rs. 20.	Actual number that paid taxes in 1931-32	843
N.-W. F. P. and Sind is Rs. 20.	Actual number in first quarter of 1932-33	443

* Exclusive of District Board License Fees.

SCHEDULE OF TAXATION ON MOTOR LORRIES PER QUARTER.

Old weights.	Old rates under Act.	New weights.	New rates.
	Rs.		Rs.
Not exceeding 15 cwt.	75	Not exceeding 15 cwt.	40
From 15 cwt. to 30 cwt.	125	From 15 to 25 cwts.	80
		From 25 cwt. to 30 cwt.	100
From 30 cwt. to 50 cwt.	200	From 30 cwt. to 35 cwt.	125
		From 35 cwt. to 50 cwt.	150
From 50 cwt. to 70 cwt.	225	From 50 cwt. to 70 cwt.	225
From 70 cwt. to 100 cwt.	250	From 70 cwt. to 100 cwt.	250
Over 100 cwt.	275	Over 100 cwt.	275

Memorandum II.—Survey—Road and Railway Communications.

The three questions given below were placed before 7 different representative centres, closely in touch with such matters, *viz.*, Madras, Quilon, Secunderabad, Coimbatore, Bangalore, Vizagapatam and Trichinopoly. A summary of their replies received is given below in the order of the questions.

1. *What is the average cost of running a 30-cwt. lorry or bus?*

The two statements attached give accurate and reliable information.

2. *What is the condition of this business at present and are those engaged in it really making a profit?*

All unanimously agree that bus owners are, except in the case of a few isolated combines, definitely not making a profit. It is probable that a few bus owners, if asked whether they are making a profit, may reply in the affirmative, but if their books were to be produced, it would be found that probably only one out of every 50 had made any provision for depreciation or interest on capital and that, therefore, their profits were entirely fictitious. In a few places in the Presidency where big combines have managed to oust the smaller bus services, and are running on a 'Monopoly' basis, bus owners have been able to make what, under the present conditions, is an appreciable profit, but bus owners in such a fortunate position are few and far between. In the Nizam's Dominions 'District Monopolies' are granted and in such cases the buses are running at a profit, but it must be doubted whether these profits are substantial.

Undoubtedly there are many services running over similar routes to the Railways but this practice is by no means general and in most cases where it does exist, it must be admitted that buses transport people from door to door which is a most important facility where many towns are situated some distance away from the railway stations and, in such cases, it is more convenient for passengers to travel by bus. As a specific instance, a passenger travelling by train from Vizianagram to Chicacole Town has a journey of 8 miles by bus at the other end. In great many instances also railway fares are rather higher and bus fares are found to be slightly lower especially when the door to door convenience is considered. If, as is often the case, a rate war is entered into between bus owners, fares fall even lower and bus owners have even been known to carry passengers free of all costs purely in order to spite a would-be competitor.

Points of interest from each centre.

Secunderabad.—District Monopolies are granted in the Dominions outside Hyderabad and Secunderabad which enable the monopolists to make fairly substantial profits. There are two bus routes, however, in direct competition with the railway, *viz.*, Masulipatam-Bezwada and local Secunderabad-Hyderabad services. The first has forced reduction in railway passenger fares.

Coimbatore.—Quote as examples of profitable services the Canara Public Conveyance Co., Mangalore, Hanuman Transport Limited, Udipi and United Motors, Coimbatore, each of whom make provision for interest on capital and depreciation on vehicles. Other big concerns are unknown.

Bangalore.—Bus owners in Mysore State are more handicapped than those in British India owing to (1) double taxation, *which is redoubled where bus routes run in direct competition with the railway;* (2) buses in excess of traffic needs are running on each route, although these are controlled by Licenses issued by Police Authorities; (3) buses start at ¼ or ½ hour intervals and therefore full paying load is also frequently impossible; (4) continued existence of toll gates. Bus owners in Mysore State do not make any allowance for depreciation on their vehicles. Due to animosity between owners some 2 or 3 months ago, passengers between Mysore and Mercara were carried *free.*

Vizagapatam.—Only three bus services of any considerable size are making a profit, although not substantial, due to the fact that they each have a monopoly. Here again Vizagapatam mention that no allowance is made for depreciation or interest on capital. Any profit which might be made by owners is generally squandered in unnecessary competition between themselves. The railway stations are frequently located away from the town which is definitely a nuisance to the passengers and consignors of goods; also the timings are infrequent and inconvenient. There is one bus service in competition with the railway namely that between Gudivada and Masulipatam between which stations trains are infrequent and in convenient.

3. *What is the extent to which mechanical transport is engaged in the transporting of goods over considerable distances and what is the opinion when it is in direct competition with the railways?*

In only one or two rare cases will it be found that railway goods transport is suffering from competition from lorry transport. In such cases there is as a rule justification for such competition. The way in which railways handle perishable goods and the time they take for delivery of such goods is a definite handle for the lorry owner as he is in a position to deliver goods in two or three hours whereas the railway would take at least a couple of days, *e.g.*, goods can be sent from Kurnool to Gooty in two or three hours whereas if sent by train, they are transhipped at Guntakal and then there is a further delay at Dronachellam. Undoubtedly, lorry transportation would be on a larger scale if it were not for the fact that bullock carts and hand carts are not taxed. Transport of goods by lorries over considerable distances will take some time to evolve, but at present there is or rather would be, if bullock carts were taxed, considerable scope for this method of transportation without endangering railway goods transport—in fact as an assistance to railways.

Points of interest from each centre.

Madras.—Lorries bringing rice from surrounding districts to Madras are making a reasonable profit. Lorries engaged in cotton growing districts round Adoni are also making a reasonable profit and have captured a good deal of bullock cart trade. Toddy lorries are making a profit. In Madras City we understand that certain private companies with their own lorries running full time can hardly make them pay as contractor's transport is so cheap due to prevailing competition. Railways sometimes take 3 to 4 days to transport goods which a lorry could deliver in a few hours; also railway freights are heavier. Competition, however, for motor transport over considerable distance is weak. In normal times there will be sufficient trade for both Railways and lorries.

Quilon.—There are no instances of lorries carrying goods in competition with Railways.

Secunderabad.—Mechanical transport, owing to the heavy taxation has not been able to compete with the old bullock carts in the carriage of goods. Nizam's State Railway's own services have led to active competition; also suburban railway service is not sufficiently frequent to meet public demands. Lorries running in Palnad district and from Bhongir are over routes not fed with railway communication but are feeders to rail heads.

Coimbatore.—Nine routes over which lorry transport is run are mentioned but only one is in direct competition with railway transport, *viz.*, Ootacamund-Mettupalayam which is evidently justified as railway timings and arrangements for the transport of perishable goods are neither sufficient nor efficient and also the rates charged are undoubtedly high. Single lorry owners only compete during the ghat produce season.

Bangalore.—There are no instances of Motor transport engaged in competition over considerable distances with the railway. Several lorry concerns are mentioned, one of which, namely the Estate lorries running from Coorg and Biligiri to the nearest rail head, are of a definite help to the railways.

Vizagapatam.—One large service runs between the Jeypore Agency and Salur definitely assisting the railway as it brings goods from the Agency to the nearest railway head, which is Salur.

Trichinopoly.—Mechanical transport companies are unknown, except for one instance where goods are transported between Kodaikanal and Kodaikanal Road. There is no large opening at present for long distance goods traffic by road. There is a possibility of parcel traffic, but services would have to prove themselves regular and efficient before they would be sufficiently patronised to return a reasonable profit.

COST OF RUNNING A CHEVROLET 30-CWT. BUS (23 SEATER) @ Rs. 3,500 COMPLETE.

Annual Standing Charges—

	Rs.	
Licences—		
Registration Fee	16	1,882.
Wheel Tax	..	
Government Permit	16	
Provincial Taxes	690	
District Board or Municipal Taxes	1,110	
Brake Testing fee	50	
Any other taxes	..	
Insurance—		
Vehicle, goods	250	(ascertained from Commercial Insurance Co.).
Depreciation—		
On life of bus, say, over 3 years less cost of tyres	1,166	
Wages—		
Driver (Rs. 40 per mensem)	960	
Cleaner (Rs. 15 per mensem)		
Conductor (Rs. 25 per mensem)		
Establishment charges (including sundries, etc.)	500	
Garage Rent @, say, Rs. 10 per month	120	
Interest on capital of Rs. 3,500, say 6 per cent.	210	
Total standing charges per annum	5,088	
Running Charges—		
Petrol in Gals.—1,200 glns. @ Rs. 1-9 @ 20 m.p.g.	1,875	
Oil and Grease	200	
Tyres (3 sets @ Rs. 320)	960	
Repair charges	300	
Spare parts	300	
Total running cost	3,635	
Add total standing charges	5,088	
TOTAL	8,723	

Divided by total of miles operated per annum—Cost per mile, in annas.

1,200 gallons @ 20 m.p.g.=24,000 miles @ cost of Rs. 8,723.

Hence cost per mile =5·81 annas.

COST OF RUNNING A 30-CWT. CHEVROLET LORRY WITH USUAL TYPE OF WOODEN BODY COSTING COMPLETE Rs. 3,650.

	(*a*) For Private use. Rs.	(*b*) For hire. Rs.
Licences—		
Registration fee	16	16
Wheel Tax	..	..
Government Permit	..	16
Provincial Taxes	400	400
District Board or Municipal Tax	5	250
Brake testing fees	..	..
Any other taxes	..	..
Insurance—		
Vehicle	218	250
Depreciation on life over 3 years (an expensive type of lorry might be depreciation over 5 years)	1,217	1,217
Wages—		
Driver Rs. 40 per mensem Cleaner Rs. 10 per mensem	600	600
Establishment charges	360	450
Garage	120	120
Interest on capital @ 6 per cent.	219	219
Total standing charges per annum	3,155	3,538
Running Charges—		
Petrol in Gals. (*a*) 800 glns, (*b*) 1,000 glns. @ Rs. 1-9 per gln. @ 20 m.p.g.	1,250	1,562-8
Oil	200	200
Tyres (3 sets @ Rs. 450 each)	1,350	1,350
Repair charges	200	200
Spares	300	300
Total running cost	3,300	3,612-8
And total standing charges	3,155	3,538
TOTAL	6,455	7,150-8

Divided by total of miles operated per annum—Cost per mile, in annas.

(*a*) 800 glns. @ 20 m.p.g.=16,000 miles @ cost of Rs. 6,455=6·45 annas per mile.

(*b*) 1,000 glns. @ 20 m.p.g.=20,000 miles @ cost of Rs. 7,150-8=5·72 annas per mile.

APPENDIX 5.

Summary of roads required by M. & S. M. Railway to open up areas and act as feeders to Railway, and roads required to connect Railway Stations with existing road systems.

Station.	Roads required to open up area—Name of point to which Road required.	Road required from station to link up with existing Road system.
Madras District.		
Muddanuru . . .	Pulivendla . . .	....
Korattur . . .	....	Isolated from Road system.
Tinnanur . . .	....	Ditto.
Mosur	....	Ditto.
Manur	....	Ditto.
Anantarajupet . .	....	Ditto.
Krishnapuram . .	....	Ditto.
Juturu	....	Ditto.
Patakottacheruvu . .	....	Ditto.
Nancherla . . .	....	Ditto.
Molagavalli . . .	....	Ditto.
Aspari	....	Ditto.
Kupgal	....	Ditto.
Tungabhadra . .	....	Ditto.
Thalangai . . .	....	Ditto.
Mulanur . . .	....	Ditto.
Gudupalli . . .	....	Ditto.
Bisanatham . . .	...	Ditto.
Devangonthi . .	....	Ditto.
Tiruvettiyur . . .	....	Goods Shed isolated.

APPENDIX 5—*contd.*

Summary of roads required by M. & S. M. Railway to open up areas and act as feeders to Railway, and roads required to connect Railway Stations with existing road systems.

Station.	Roads required to open up area—Name of point to which Road required.	Road required from station to link up with existing Road system.
Bezwada District.		
Gunadala	Gunadala, 3 miles	....
Denduluru	Denduluru, 2 miles Seethampeta, 2½ miles.	....
Cudlavalleru	....	Connection with Masulipatam-Tiruvur Trunk Road.
Draksharamam	Draksharamam, 2½ miles	....
Velangi	....	Connection with Cocanada-Kotipalle Trunk Road.
Aratlakatta	Aratlakatta, 1½ miles Bhavaram.	Ditto.
Vendra	Vendra, 2 miles	....
Aravalli	Aravalli	....
Kaldhari	Feeder roads are under construction to— (i) Sathyavad. (ii) Chilakapadi. (iii) Kaldhari. Work to be expedited.	....
Akividu	....	Connection with Kaikalur-Bhimavaram Road.
Mandavalli	....	Connection with Trunk Road required.
Kaikalur	Kaikalur	....
Putlacheruvu	Putlacheruvu Lingala, 2½ miles. Kanakolu, 2 miles. Mothigamudi, ½ mile.	....
Moturu	This station is isolated and roads to surrounding villages and to the Trunk Road are required.	
Bangalore District.		
Nagasamudram	Peruru, 25 miles	....
Yerrampalli	Mushtikovilla, 5 miles	....
Chinnekuntapalli	Tadmari, 9 miles	....
Mudigubba	Dorigal, 6 miles	....
Melskavemala	Reddipalli, 5 miles	....
Kurubalakota	Tettu, 5 miles	....
Chintaparti	Numanampalli, 9 miles	Road from station to Musturu.
Chandragiri	Bhakarapet, 11 miles	....
Yellakrua	Pallam, 6 miles	....
Vendodu	....	Road from station to Vonkatagiri-Nayudupet Road.

APPENDIX 5—*contd.*

Summary of roads required to open up areas and act as feeders to Railway, and roads required to connect Railway Stations with existing road systems—contd.

Station.	Road required to open up area—Name of point to which Road required.	Road required from station to link up with existing Road system.
Guntakal District.		
Bandarupalli . . .	1. Revella, 4 miles . 2. Ponnekalu, 3 miles. All villages in vicinity unconnected with Road system or Railway station.	Connection with Trunk Road required.
Siripuram . . .	17 villages in vicinity with no road to station.	Isolated from Trunk Road.
Peddakurapadu . .	1. Achampet . . 2. Amravati.	Ditto.
Sattenapalli . . .	Many villages in vicinity with no road to station.	....
Reddigudem . . .	1. Reddigudem, ½ mile . 2. Dodderu, 6 miles. 3. Ganapavaram, 2 miles.	Isolated from Trunk Road.
Bellamkonda . . .	Bellamkonda . .	Ditto.
Pidugurala . . .	All villages in vicinity have no roads to station.	Ditto.
Thummalacheruvu . .	Ditto . .	Ditto.
Nadikudi . . .	Ditto . .	Ditto.
Gurzala . . .	Ditto . .	Ditto.
Rentachintala . .	Ditto . .	Ditto.
Macherla . . .	1. Sirigiripada . . 2. Enapalayam.	....
Gadiganuru . . .	....	Isolated from Main Road.
Tornagallu . . .	Veddur, 4 miles . .	Connection between station and Sandur Road.
Virapur . . .	Chintaguntla, 3 miles .	....
Bantanhal . . .	1. Pollakai, 4 miles . 2. Thimmapuram, 4 miles. 3. Dharmapuri, 8 miles. 4. Janardhanapalli, 8 miles. 5. Peddakottala, 10 miles.	Present cart track should be converted to pucca road.

APPENDIX 5—*contd.*

Summary of roads required to open up areas and act as feeders to Railway and roads required to connect Railway Stations with existing road systems—contd.

Station.	Roads required to open up area—Name of point to which Road required.	Road required from station to link up with existing Road system.
Guntakal District—contd.		
Maddikera . . .	1. Hampa . . . 2. Edaveli. 3. Karapuram. 4. Chippigiri.	....
Tuggali . .	1. Bonthalu, 4 miles . 2. Ramalingappali, 7 miles. 3. Ramapalli, 13 miles. 4. Jollapuram, 15 miles. 5. Hosur, 10 miles. 6. Putcha Rayaluma-dam, 7 miles. 7. Kottala, 7 miles. 8. Ratna, 10 miles.	....
Pendekallu . .	1. Devankonda, 14 miles 2. Pendekallu, 1½ miles. 3. Mukpalla, 2 miles. 4. Naldasonda, 4 miles. 5. Pandikura, 7 miles. 6. Ramakonda, 1 mile. 7. Irhampalli, 1 mile. 8. Kottabruhu, 5 miles. 9. Peddapubila, 7 miles. 10. Pupili, 7 miles. 11. Ramalingayapalli. 12. Kadamgudla. 13. Lakayapalli. 14. Chintalakuru. 15. Sabesapuram.	Present cart track to be converted into pucca road.
Malliyala . . .	1. Katrakonda . . 2. Allamkonda. 3. Lakkasagaram. 4. Kottapalli. 5. Pandarlapalli. 6. Karangadi. 7. Bandruda. 8. Chityala. 9. Koilkuntla. 10. Kottur.	Ditto.

APPENDIX 5—*contd.*

Summary of roads required to open up areas and act as feeders to Railway, and roads required to connect Railway Stations with existing road systems—contd.

Station.	Roads required to open up area—Name of point to which Road required.	Road required from station to link up with existing Road system.
Guntakal District—contd.		
Dronachellam . .	1. Kamagamguntla, 4 miles. 2. Kambulapadu, 10 miles. 3. Kothacheru, 6 miles. 4. Kothakotta, 12 miles. 5. Venkatapuram, 6 miles.	....
Malkapuram . . .	1. Chinnamalkapuram . 2. Kottapalli. 3. Buggapuram. 4. Kamalapuram. 5. Yerraguntla. 6. Walsala.	No road from station to Main Road.
Rungapuram . . .	14 villages with 15 miles with no road to station.	....
Betamcherla . . .	Bunganapalli, 12 miles .	Isolated from Main Road.
Bugganipalli . . .	22 villages within 12 miles without road to station.	Ditto.
Panyam . . .	6 villages within 9 miles without road to station.	....
Gazulapalli . . .	1. Sirival, 10 miles . 2. Rudravaram, 17 miles. 3. Bukkapuram, 5 miles. 4. Thimmapuram, 5 miles.	....
Diguvametta . . .	9 villages in vicinity without road to station.	....
Somidevipalli . .	Turimalla . . . Racherla.	....
Tarlapadu . . .	....	Connection with Main Road required.
Gajjalakonda . .	1. Tokkapalli, 8 miles . 2. Uddumadgu.	....
Donakonda . . .	Gullpaldu, 3 miles .	....

APPENDIX 5—*concld.*

Summary of roads required to open up areas and act as feeders to Railway, and roads required to connect Railway Stations with existing road systems—concld.

Station.	Roads required to open up area—Name of point to which Road required.	Road required from station to link up with existing Road system.
Guntakal District—concld.		
Munumaka . . .	1. Pularipalaiyam, 2½ miles. 2. Aravapalli, 1 mile. 3. Mukkarapalli, 6 miles. 4. Kathari, 2 miles. 5. Amavaram, 2 miles.	....
Satulur	Ganapavaram, 8 miles .	....
Bevuru	Gollarhalle, 3 miles .	....
Gulapalaiyanu . .	Kamalapadu, 3 miles .	....
Khaderpet . . .	10 villages in vicinity without road to station.	....
Kalluru . . .	1. Kalluru, 2 miles . 2. Ellore, 4 miles. 3. Kalmadi, 6 miles. 4. Thirumallu, 8 miles.	Approach road required from station to Main Road.
Garladinne . . .	19 villages in vicinity without road to station.	....

APPENDIX 6.

Feeder roads required by South Indian Railway.

Serial No.	Name of station.	Feeder Roads.	Approximate distance of the road required.
			Miles.
	Madras District.		
1	Adichchanur . . .	Feeder road required to be provided by the District Board, South Arcot.	3
2	Velanandal . . .	Feeder road required to be provided by the District Board, North Arcot.	2
3	Onnupuram . . .	Ditto . .	½
4	Pennathur . . .	Required to be provided by the Taluq Board, North Arcot.	½
5	Arasur	Ditto . .	¼
6	Minambakkam . .	Required to be provided by the Military authorities, St. Thomas Mount.	¼
	Trichinopoly District.		
1	Manali	Feeder road to connect the approach road is required. A bridge across the river is under construction by the District Board and when this is completed the feeder road will maintain connection with the approach road.	2
2	Tiruchittrambalam . .	The feeder roads at these stations are of mud and it is understood the District Board will not do the gravelling work for some time to come due to economy.	¼
3	Merpanaikadu . . .		¼
4	Kariapatnam . . .		5
5	Melamarudur . . .		5
6	Adirangam . . .		¼
7	Bikshandarkoil . .	A feeder Road between Manachanallur and Madras Trunk road is under proposal by the Trichy. District Board authorities.	4
8	Mukhasaparur . .	Feeder roads are to be provided by the District Board.	..
9	Asakalathur . . .	Feeder roads connecting the damaged cart road from Asakalathur are unserviceable.	..

APPENDIX 6—*contd.*

Feeder roads required by South Indian Railway—contd.

Serial No.	Name of station.	Feeder Roads.	Approximate distance of the road required.
			Miles.
	Trichinopoly District—contd.		
10	Pukkiravari . . .	Feeder road if provided by the District Board up to Kallakurichi will increase traffic.	..
11	Talaivasal . . .	Feeder road required to be provided by the District Board.	..
12	Valappadi . . .	Feeder road required to be provided by the District Board.	..
13	Seshanchavadi . .	Feeder road required to be provided by the District Board to connect the station approach road.	..
14	Salem East . .	Feeder road required to be provided by the District Board.	..
15	Sendurai . . .	Feeder roads to both goods and passenger approach roads should be provided urgently by the Taluk Board as, if provided, traffic will increase considerably.	1
16	Kattukkottai . . .	Feeder roads should be provided by the District Board.	..
17	Melnariyappanur . .		..
	Madura District.		
1	Madathukulam . .	Feeder road to be provided by the District Board, Coimbatore.	..
2	Anaimalai Road . .	Feeder road to be provided by the District Board, Coimbatore.	..
3	Minakshipuram . .	Feeder road to be provided by the District Board, Malabar.	..
4	Kollengode . . .	Ditto . .	..
5	Pudunagaram . . .		..

APPENDIX 6—*contd.*

Feeder roads required by South Indian Railway—contd.

Serial No.	Name of station.	Feeder Roads.	Approximate distance of the road required.
			Miles.
	Tinnevelly District.		
1	Veppilaipattichatram .	Feeder road to be provided by Satur Taluq Board, Ramnad District.	1
2	Mettur	Feeder road to be provided by the District Board, Tinnevelly.	1
3	Kachchanavilai . .	Ditto . .	2½
4	Nainaragaram . . .	Ditto . .	¼
5	Kappil	Feeder roads to be provided by Travancore Durbar.	4
6	Akathumari . . .		6
	Podanur District.		
1	Kallar	Feeder roads to be provided by the District Board.	1
2	Adderley . . .		1
3	Hillgrove . . .		1
4	Runnymede . . .		1
5	Kandikuppam . .	Feeder road required from Trunk Road to be provided by Local Board.	1
6	Doddampatti . . .	Feeder road to be provided by the District Board.	6
	Calicut District.		
1	Charvattur . . .	Feeder road required to be provided by Kasaragad Taluq Board, South Kanara, to connect the main road.	¼
2	Trikarpur . . .	Ditto . .	¼
3	Elimala	Feeder road to be provided by Chirkal Taluq Board, North Malabar, to connect the main road passing to the East.	3
4	Cannanore . . .	Feeder road required to be provided by Cannanore Municipality to connect the main road.	½

APPENDIX 6—*concld.*

Feeder roads required by South Indian Railway—concld.

Serial No.	Name of station.	Feeder Roads.	Approximate distance of the road required.
	Calicut District—contd.		Miles.
5	Nadapuram Road . .	Feeder road to be provided by Kurumbaranad Taluq Board, North Malabar, to connect the main road.	1
6	Iringal	Ditto . .	½
7	Kadalundi . . .	Feeder road from the Beypore Ferry about 2 miles connecting Chalian a rising village on the Southern bank of Beypore river and the railway station, should be provided by the District Board, Malabar.	5
8	Vallikunnu . . .	Feeder road connecting the Coast road, which runs half a mile west of station with the station approach road, is required to be provided by the Malabar District Board.	5
9	Karakad . . .	Feeder road connecting Palghat-Pattambi road and the station is required to be provided by the Malabar District Board.	1

2 (a). BOMBAY.

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BOMBAY.

CHAPTER I.—INTRODUCTORY.

1. *Brief Itinerary.*—(*a*) We reached Ahmedabad on Saturday, October 22nd, and stayed there until Sunday evening, October 23rd, to attend a meeting of district representatives convened for us by the Collector. We reached Bombay on Monday, October 24th, and interviewed the Agents of the B., B. & C. I. Railway and the G. I. P. Railway on that date. We left Bombay the same night, for Belgaum reaching that place on Tuesday morning, October 25th. On the same day we proceeded to inspect the roads in the neighbourhood of Belgaum and Dharwar proceeding *viâ* Londa and Astoli to Dharwar and returning to Belgaum by the Poona-Bangalore road.

On October 26th the Commissioner of the Southern Division convened at Belgaum a meeting of district officials and others to meet us, and the same afternoon we left for Poona, reaching there on Thursday, October 27th. We remained at Poona for the rest of the week, attending a meeting held by the Commissioner, Central Division, on October 28th. We then proceeded to Bombay where we stayed until Thursday, November 3rd. We returned to Delhi on Saturday, November 5th.

(*b*) During our tour of the Bombay Presidency we travelled 1,352 miles by rail and 132 miles by road.

2. *Officials deputed to assist us.*—(*a*) *Government of Bombay.*—Mr P. B. Bowers, Chief Engineer and Secretary to the Government of Bombay arranged to collect for the purpose of our report the statistics and information in regard to road development in the Presidency. He deputed Mr. N. N. Ayyangar, B. A., L.C.E., M.I.E., Deputy Secretary to the Government of Bombay, P. W. D., to travel with us and Mr. Ayyangar attended all the meetings held in the Presidency.

(*b*) *Railway officials.*—(i) *B., B. & C. I. Railway.*—The Agent of the B., B. & C. I. Railway deputed Mr. A. E. Watkins, Deputy Chief Engineer, and Mr. W. J. A. Moore, Deputy Agent, to attend the district meeting held in Ahmedabad on October 23rd. Mr. H. P. Ball, General Traffic Manager collected for us the information relating to the B., B. & C. I. Railway, which we required for our report.

(ii) *G. I. P. Railway.*—Mr. Tylden-Pattenson, Agent of the G. I. P. Railway, deputed Mr. J. T. Day, Senior Assistant Traffic Manager, Officer-in-charge Survey and Motor bus competition, to attend the meetings held in Bombay and Poona. Mr. J. T. Day collected for our report the information in regard to motor competition, etc., so far as it affects the G. I. P. Railway in the Bombay Presidency.

(iii) *M. & S. M. Railway.*—Mr. H. N. Colam, Agent of the M. & S. M. Railway, deputed Mr. R. E. Nunn, District Traffic Superintendent, Hubli, to attend the district meeting held at Belgaum. Mr. C. G. W. Cordon, Deputy Transportation Superintendent, compiled the information in regard to motor competition, etc., so far as it is affecting the M. & S. M. Railway in the Presidency.

(*c*) We take this opportunity of thanking the above gentlemen for the ready help they have given us in supplying information for the purpose of our report.

3. *Interviews and meetings.*—(*a*) At Poona we were granted an interview by Mr. P. B. Bowers, Chief Engineer and Secretary, Bombay Government, P. W. D., and discussed with him the objects of our tour.

(*b*) At Ahmedabad a meeting was convened by Mr. J. B. Irwin, I.C.S., Collector, at which the following gentlemen were present:—

Mr. M. S. Jayakar, Collector of Kaira.

Mr. A. B. Spencer, I.S.E., Superintending Engineer, Northern Circle.

Mr. N. N. Ayyangar, B.A., L.C.E., M.I.E., Deputy Secretary to the Government of Bombay, P.W. D.

Mr. M. T. Adalja, I.S.E., Executive Engineer, Ahmedabad Division.

Mr. I. M. Mehta, Chief Officer, District Local Board, Ahmedabad

Mr. A. E. Watkins, Deputy Chief Engineer, B., B. & C. I. Railway.

Mr. W. J. A. Moore, Deputy Agent, B.. B. & C. I. Railway.

Mr. J. N. A. James, District Traffic Superintendent, B., B. & C. I Railway.

(*c*) At Belgaum Mr. Mackie, C.I.E., I.C.S., Commissioner of the Southern Division, convened a meeting at which both the Belgaum and Dharwar districts were represented, as well as the district local board Bijapur. The following gentlemen were present:—

Mr. H. Montgomery, I.C.S., Collector, Belgaum.

Mr. J. F. B. Hartshorme, I.C.S., Collector, Dharwar.

Mr. N. N. Ayyangar, B.A., L.C.E., M.I.E., Deputy Secretary to the Government of Bombay.

Mr. A. H. White, Superintending Engineer, Southern Circle.

Mr. A. Bhattacharya, Executive Engineer, Belgaum.

Mr. E. T. Roch, Executive Engineer, Dharwar.

Mr. P. R. Chikodi, M.L.C., President, Local Board, Belgaum.

Mr. S. T. Patil, President, District Local Board, Bijapur.

Rao Bahadur B. L. Patil, M.L.A., President, Local Board, Dharwar

(*d*) At Poona, Mr. H. B. Clayton, C.I.E., I.C.S., Commissioner of the Central Division, convened a meeting at which the following were present :—

Mr. H. V. Tulpule. President, District Local Board, Poona.

Mr. B. K. Bose, Executive Engineer, Muttra Canals

Mr. M. A. Mirza, Superintending Engineer, Central Division.

Mr. N. B. Baxter, Superintending Engineer.

Mr. Hennett, Executive Engineer, Nira Left Bank Canals.

Mr. L. E. Greening, Executive Engineer, Special Irrigation Division.

Mr. T. S. Pipe, Executive Engineer, Poona Division.

Mr. C. C. Ingles, Superintending Engineer.

Mr. W. A. Evershed, Executive Engineer.

Mr. N. N. Ayyangar, B.A., L.C.E., M.I.E., Secretary to the Government of Bombay, P. W. D.

Mr. R. S. Moberly, Divisional Traffic Manager, G. I. P. Railway, Poona.

Mr. J. T. Day, Senior Assistant Traffic Manager and Officer in charge survey and motor bus competition.

(*e*) Bombay is the headquarters of the G. I. P. and B., B. & C. I. Railways, and we accordingly asked the Agents of those railways to grant us interviews. Meetings were held at the headquarters of each railway at which the following were present :—

(i) *G. I. P. Railway.*

Mr. Tylden Pattenson, Agent, G. I. P. Railway.

Mr. Peel Goldney, Chief Traffic Manager, G. I. P. Railway.

Mr. N. N. Ayyangar, B.A., L.C.E., M.I.E., Deputy Secretary to the Government of Bombay. P. W. D.

(ii) *B., B. & C. I. Railway.*

Mr. M. W. Brayshay, Agent of the B., B. & C. I. Railway.

Mr. H. P. Ball, General Traffic Manager.

Mr. A. E. Watkins, Deputy Chief Engineer.

Mr. W. J. A. Moore, Deputy Agent.

Mr. N. N. Ayyangar, B.A., L.C.E., M.I.E., Deputy Secretary to the Government of Bombay, P. W. D.

(*f*) *Other interests.*—(i) The Indian Road and Transport Development Association arranged a meeting for us at which the following gentlemen were present :—

The Hon'ble Mr. E. Miller, J. P., General Manager, Development Department, Messrs. Burmah-Shell Oil Storage and Distributing Co. of India Ltd. . .	Representing the Council, I. R. T. D. A. Ltd.
H. E. Ormerod, Esq., J. P., of Messrs. Cement Marketing Co. of India Ltd. .	
S. Guevrek, Esq., Proprietor, Messrs. International Motor Co.	
H. S. Sayer, Esq., General Manager, Messrs. Morris Industries (India) Ltd. . .	
F. R. Bunker, Esq., Service Engineer, Messrs. Dunlop Rubber Co. (India) Ltd.	Representing the Bombay Branch Committee, I. R. T. D. A. Ltd.
Nurmahomed M. Chinoy, Esq., Partner, Messrs. Bombay Garage . . .	

Lt.-Col. H. C. Smith, O.B.E., M.C., General Secretary of the Association.

N. N. Ayyangar, Esq., Deputy Secretary, Public Works Department, Bombay.

(ii) Messrs. Killick Nixon & Co., Managing Agents for certain light railways have their registered offices in Bombay and we arranged an interview with Mr. Lowndes, partner of the firm, and Mr. Robinson, to discuss with them the question of motor competition, especially in regard to light railways.

(iii) We had an informal discussion with representatives of the Indian Merchants' Chamber and the Maharashtra Chamber of Commerce at which the following were present :—

Mr. Ramchandra Iyer, representative of the Indian Merchants' Chamber.

Mr. M. L. Dahanukar, representative of the Indian Merchants' Chamber and Maharashtra Chamber.

Mr. J. K. Mehta, Secretary, Indian Merchants' Chamber.

(iv) We met the following representatives of the Servants of India Society, Gokhale Institute of Politics and Economics :—

Mr. V. R. Godgil.

Mr. L. V. Gogate, B.Sc. (U. S. A.), Investigator Gokhale Institute of Politics and Economics.

(v) While in Bombay we also consulted Mr. Trollape, Agent, and Mr. Alton, Traffic Manager of the Bombay Tramway Company, who furnished us with much useful information.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

4. *Difficulties of statistical treatment and general.*—We have found very great difficulty in presenting concisely any picture of the facilities of communication in Bombay Presidency by the statistical method. A glance at the map will show how, owing to the fragmentation of British Indian territory in Gujarat and with the Southern Mahratta States, it is necessarily difficult to compile any statistics relating the milage of roads and railways to area and population. In order, however, to complete the statistical picture of communications in the different provinces we thought it essential to attempt to work out the same statistics for the total area of British Indian territory in Bombay and we present these in the hope that, while we cannot pretend to have attained to meticulous accuracy, yet they afford an approximately true picture of the state of affairs. We have also found very great difficulty in the preparation of the map, because, apart from a statement of the milage of metalled and unmetalled roads maintained by provincial and local authorities, and a somewhat out of date motor guide map, we were unable to obtain at headquarters any up to date road map showing metalled and unmetalled roads. The map has therefore been compiled by us from such information as we were able to obtain, but we are only too well aware that it must be inaccurate in detail. We have indeed been in some doubt as to the possibility of producing any map at all but we have concluded that in respect of illustrating the area more than ten miles from any railway and also of throwing into relief the general position as regards the existence of parallel roads and railways, the map which we have been able to produce is better than none at all. With these reservations we state the salient features of the position as follows. The area of Bombay Presidency is 77,035 square miles and the population according to the 1931 census is 21,879,123. There are 1,427 miles of broad gauge railway, 804 miles of metre gauge, and 270 miles of narrow gauge, or a total of 2,537 miles, the principal railways serving the province being the Bombay, Baroda and Central India, the Great Indian Peninsula, and the Madras and Southern Mahratta. There is also in the south-west corner of the Presidency the Barsi Light Railway operating 137 miles of 2′-6″ gauge railway in the Presidency. There are some 9,760 miles of metalled roads maintained by the Public Works Department and district boards of which some 360 miles are in State territories, leaving 9,400 miles in the Presidency proper. Of the metalled roads some 6,200 are in charge of the Public Works Department and the balance in charge of local bodies. As far as we have been able to ascertain there are in addition some 4,000 miles of improved unmetalled roads, that is to say roads treated with moorum, laterite, etc., of which the majority are in charge of local bodies; and a further 4,200 miles of other unmetalled roads maintained by district boards. A considerable majority of the metalled

and improved unmetalled roads, however, are provided only with low level causeways and are liable to considerable interruption during the monsoon. Generally speaking, the state of roads in the Presidency is said to be deteriorating where traffic is heavy, but expenditure is being incurred from the Central road development account towards the improvement and strengthening of roads which can no longer carry the existing traffic as untreated water bound macadam roads.

5. *Improved unmetalled roads.*—Beyond the milage of roads surface treated with moorum or laterite there has not, up to the present, been any marked development in the general improvement of earth roads as such.

6. *Classification of roads in the province.*—For administrative purposes and for purposes of finance the roads are roughly classified into two divisions, "provincial" maintained by Government and "local" maintained by local bodies. Recently, however, all roads in the Presidency have been reclassified in accordance with the tentative classification adopted by the Road Conference in April 1930 for the purpose of applying the road development account, as follows:—

Class I.—Roads of importance from the point of view of more than one province or State or of more than one Commissioner's Division, or in Madras, more than one Revenue District within the province.

Class II.—Roads of importance from the point of view of more than one Collector's District, or in Madras, more than one Revenue Division, and also roads serving as important feeders to railways, waterways and to Class I roads.

Roads of Class I and II will be eligible for grants from the Central Road Fund provided they form part of a consistent plan of road development. Any other schemes submitted by local Governments which do not fall within Classes I or II should be considered on their merits.

Class III.—Other roads.

These have further been sub-divided into three categories in each class—heavy traffic, medium traffic, and light traffic, but this subdivision is based upon general considerations and judgment and not generally upon traffic statistics, the object being to obtain a classification which will stand for some time, and thus by estimating the traffic on certain roads to determine the category into which they will fall after the first stage of improvement.

7. *Expenditure on roads.*—The expenditure on roads of all classes for a period of years ending with the year 1926-27 was given in statement F at page 99 of the report of the Indian Road Development Com-

mittee. The figures furnished to us in respect of the year 1930-31 are as follows :—

——	Original works, construction and reconstruction.	Repairs.	Total.
	Rs.	Rs.	Rs.
On provincial roads . .	6,89,358	32,35,966	39,25,324
On local roads . . .	5,00,000	14,30,532*	19,30,532†
TOTAL .	11,89,358	46,66,498	58,55,856

* The information supplied to us gives only the total expenditure upon district board roads during 1930-31, but does not state what proportion was spent upon maintenance and what upon construction. We understand, however, that the total expenditure on maintenance in that year was in the neighbourhood of Rs. 53 lakhs of which Rs. 6 lakhs was in Sind and the balance, *i.e.*, Rs. 47 lakhs in the Presidency proper. It appears therefore that of the recorded expenditure upon district board roads some Rs. 5 lakhs was upon original works and we have made the adjustment in the figures in the total accordingly.

† Of this amount Rs. 11,28,389 was provided by grants in aid from provincial revenues.

From the above figures it will be seen that while, taking metalled roads only, the provincial Government directly maintains 6,521 miles out of a total of 9,760 or 67 per cent. the total expenditure upon maintenance of provincial roads appears to have amounted to some 68·5 per cent. of the total expenditure on maintenance. This, of course, is merely a rough comparison as the relatively small cost of maintaining unmetalled roads has been ignored. If, however, the amounts contributed from provincial revenues in the form of grants-in-aid to local bodies are taken into account it will be seen that out of an expenditure of Rs. 58,55,856, only Rs. 11,28,387 or some 19¼ per cent. is contributed from local resources.

8. *Communications in relation to the area and population served.*— For the purpose of comparison with other provinces we have, as usual, worked out certain statistics and these are given at Appendix 1 for the whole Presidency as there is no district having a density of less than 100 per square mile. The density of population in the Presidency does not vary between such wide limits as in other parts of India. The mean is 284 per square mile, the lowest being 106 in Kanara and the highest 465 in Kaira. The area served by one mile of railway is about 30 miles, the mean condition being thus that the most distant point from any railway is 15 miles. The area served by one mile of metalled road is 12·2 miles, and, if improved unmetalled roads are taken into account, the area served by one mile of " motorable " road works out on the average to 5·8 square miles. Finally, if all roads maintained by provincial and local authorities are taken into consideration, the area dependent upon one mile of road is 4·35 square miles, the mean condition thus being that most people are within about two miles of a road maintained by public authority although, of course, there must be

wide divergence between the mean and the extreme conditions. The area more than 10 miles from any railway is, as far as we are able to estimate it in this highly fragmented territory, some 41,500 square miles or 54 per cent. of the total area. The length of metalled roads and railways which are parallel with each other and within 10 miles is 1,510 miles or 16 per cent. of the milage of metalled roads, and 60 per cent. of the milage of railways. To return to the statistics regarding railways, it will be seen that in the mean condition in the Presidency the railway system has a wider mesh than in many other parts of India. But having regard to the low mean density of the population and to considerable areas of Ghat and mountainous country, we do not think that in the present economic circumstances there can, with one or two possible exceptions, be any early scope for further railway development. In the Deccan, where trap rock is plentiful, and also in the southern parts of the Presidency the provision and maintenance of roads for motor transport not exceeding two-ton capacity vehicles appears to be relatively inexpensive The advent of motor transport, however, has not been accompanied by any corresponding increase in the resources of local Government and district boards for the maintenance of roads, and in recent years considerable deterioration has unfortunately taken place owing to the inability of road authorities to provide even the relatively small sums necessary for the maintenance of surfaced roads. The institution of the road development account was followed so closely by the general depression that it will serve merely to arrest the damage and to some extent to reconstruct the roads in the place of funds which were previously available and thus but little of the leeway has been made up. The local Government has moreover been constrained to divert a sum of Rs. 16 lakhs from the road development account to ordinary maintenance as an interest free loan to be restored to development later.

9. *More bridges necessary.*—As already pointed out, a very considerable proportion of the milage of roads which we have recorded as being metalled or improved unmetalled, is provided only with surface causeways. There are in addition a large number of major river crossings which it is highly desirable to bridge. Finally along the coastal belt there are many tidal estuaries which are very wide and the bridging of which would require very heavy expenditure indeed.

9-A. *Saving in cost of carriage over good roads.*—We endeavoured to ascertain what might be the saving in agricultural marketing over good roads as compared with bad (*a*) between a metalled road and a good unmetalled road and (*b*) between a good and bad unmetalled road. Most marketing is done by cultivators in their own carts and it is difficult to obtain any precise figure. That there is saving in wear and tear of cattle and carts over a good road is undoubted, although where carriage is not a cash transaction the saving is disguised.

9-B. *Large villages not served by existing roads.*—As a measure of the extent to which links between larger villages and the road system

are still wanted we enquired the number of villages of 1,000 population and over which are not upon any road maintained by public authority, the milage of new roads which would be necessary to connect them, and the cost per mile of a 20-foot unmetalled road. In Gujerat we were unable to ascertain the number of villages involved, but we gathered that the actual importance of the matter is doubtful, as when crops have been harvested country carts can reach the road system over village fields without difficulty. In fact the opinion we gathered was that new roads for this purpose were not necessary. In Belgaum there are a certain number of villages of this size which are not on any public road but the opinion appeared to be that, in existing circumstances, produce could get out to the market, but that, for the benefit of passengers, link roads are necessary and every village would like to be connected with the road system so as to have access to it in all weathers. In Poona District alone there were said to be some 230 villages of 1,000 population and over of which about 100 are not on any public road, but the opinion of the meeting convened by the Commissioner of Poona, at which this question was discussed, was that the matter was not of very great importance.

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

10. *Railways serving the Presidency.*—Three of the major railway administrations serve the Bombay Presidency :—

(*a*) the Great Indian Peninsula Railway,

(*b*) the Bombay, Baroda and Central India Railway,

(*c*) the Madras and Southern Mahratta Railway.

(*a*) The Great Indian Peninsula Railway has its headquarters in Bombay, and its main line, consisting of quadruple track, runs north-easterly to Kalyan where it bifurcates, one route continuing in a north-easterly direction towards the Central Provinces ; the other turns south-east serving Poona, Dhond and Sholapur. To serve the heavy suburban section and to facilitate working on the ghats, the Great Indian Peninsula lines have been electrified as far as Igatpuri on the north-east line and Poona on the south-east line.

A chord line, 144 miles in length, runs between Manmad and Dhond joining the north-east main line with the south-east main line.

Branch lines connect Dhulia with the north-east main line at Chalisgoan, and Amalner at Jalgaon.

There are also two short 2′ -6″ gauge lines operated by the Great Indian Peninsula Railway on behalf of Messrs. Shapoorji Godbole and Coy. of Bombay, the Managing Agents :—(i) the Pachora-Jamner Railway (34 miles) and (ii) Dhond-Baramati Railway (27 miles).

(*b*) The Bombay, Baroda and Central India Railway also has its headquarters in Bombay. Its main line is electrified in the suburban area, and runs due north from the city parallel with the coast line to Baroda, where it bifurcates, one route continuing north-eastwards to Godhra, Rutlam and the north ; the other running to Ahmedabad and Viramgam in a north-westerly direction. This latter route will presumably, in time, form part of the Bombay Sind Connection.

At Surat the Tapti Valley Railway takes off from the main line and runs due east for 155 miles to Amalner where it meets the Great Indian Peninsula Railway. The Tapti Valley Railway is operated by the Bombay, Baroda and Central India Railway on behalf of Messrs. Killick Nixon & Co.

In the neighbourhood of Baroda and Ahmedabad, there are a number of branch lines on the 5′-6″, metre and 2′-6″ gauges. Some of these penetrate the numerous States in this area.

Besides the Tapti Valley Railway mentioned above, the Bombay, Baroda and Central India Railway operates on behalf of the Agents, Messrs. Killick Nixon & Co., the following light railways :—

	Miles.
(1) Ahmedabad-Parantij, metre gauge	88
(2) Champaner Road to Shivrajpur and Panimines, 2′-6″ gauge	30
(3) Godhra to Lunavada, 2′-6″ gauge	25
(4) Nadiad to Kapadvanj	28

(*c*) The Madras and Southern Mahratta Railway serves the southern division of the Presidency, its main metre gauge line between Poona and Bangalore running southwards from Poona through Miraj, Belgaum, Dharwar, Hubli to Harihar on the borders of Mysore State. At Hubli another route takes off and runs due east towards the Bellary District of the Madras Presidency, and from Gadag on this line, a branch runs due north serving Bagalkot, Bijapur and Sholapur where it meets the Great Indian Peninsula Railway.

(*d*) Astride the Great Indian Peninsula Railway south-east main line and running generally in a direction from north-east to south-west is the Barsi Light Railway, 2'-6" gauge line, 202 miles in length (including the portion in H. E. H. the Nizam's dominions, and other States). This line runs from Latur in H. E. H. the Nizam's dominions *viâ* Kurduvadi Junction on the Great Indian Peninsula Railway to Pandharpur and Miraj where it meets the Madras and Southern Mahratta Poona line.

11. *Metalled roads parallel with railways.*—Altogether the Presidency is served by 2.501 miles of railway and about 60 per cent. of this has a metalled road either parallel with it or within 10 miles of it. The distribution of the railway milage by railway administrations and gauges and the road milage parallel is as follows :—

——	5'-6"	Miles of metalled road parallel.	%	3' 3⅜"	Miles of metalled road parallel.	%	2'-6"	Miles of metalled road parallel.	%
Great Indian Peninsula	931	564	60	..	..	..	66	38	57·5
Bombay, Baroda and Central India.	562	225	40	208	10	5	67	67	100
Madras and Southern Mahratta.	..	..	..	596	427	71·6	..	..	..
Barsi Light . .	..	..	..	.	..	..	137	120	87·6
TOTAL .	1,493	789	49·5	804	437	54·3	270	225	83·2

There is thus an extensive system of roads parallel with railways; but we think that the effect of the monsoon in the Presidency is such that motor competition with the railways has possibly not developed to the extent noticeable in other provinces, where the monsoon is not so heavy, and the road surface is therefore easier to maintain and unbridged crossings cause fewer interruptions. On the other hand the Great Indian Peninsula Railway in particular reports that the road development policy under consideration by the local Government includes the improvement of certain trunk roads which, if brought up to a better standard, will undoubtedly stimulate the motor competition, especially when trade revives.

A.—Great Indian Peninsula Railway.

12. *Competitive bus services.*—The Great Indian Peninsula Railway reports that there are at least 670 buses running services in competition

with the railway, or short-circuiting it, in the area served by it, and of these 221 ply in the Bombay Presidency. We give below a list of the competitive services on parallel routes as distinct from short-circuiting services.

Bus services on roads parallel with sections of the Great Indian Peninsula Railway.

	Distance.	No. of buses.
Bombay—Poona	113	6
Lonavla—Poona	40	2
Chinchwad—Poona	12	4
Poona—Dhond	50	2
Poona—Khedgaon	30	8
Ahmednagar—Vambori	14	5
Ahmednagar—Belapur	36	4
Ahmednagar—Kopergaon	60	3
Kopergaon—Manmad	26	4
Yeola—Manmad	18	10
Sholapur—Mahol	20	20
Sholapur—Akalkot	24	4
Nasik—Kalyan	89	5
Nasik—Igatpuri	28	8
Nasik—Yeola	66	1
Nasik—Kherwadi	16	2
Chalisgaon—Nagardeola	14	5
Chalisgaon—Dhulia	35	10
Pachora—Jamner	36	7
Jalgaon—Erandol Road	20	6
Jalgaon—Paldhi		
Jalgaon—Bhusawal	16	10
Bhusawal—Viramgam	8	4

Some of these services are of a comparatively long range, Bombay to Poona being 113 miles and Nasik to Kalyan 89. It may further be remarked that the total route milage of the Great Indian Peninsula Railway serving the Presidency is 931 and out of this no less than 564 miles or 60 per cent. are being affected by motor bus services on parallel roads. Some of the services given in the table above overlap other services, but in making the calculations just given, we have made the necessary deductions to allow for these.

In the Bombay Presidency, the Great Indian Peninsula Railway only operates two short narrow gauge lines, (*a*) Pachora-Jamner and (*b*) Dhond-Baramati. As in other provinces in India, these two short light railways are suffering from intense bus competition.

13. *Short-circuiting bus services.*—The Great Indian Peninsula Railway reports that the following services are short-circuiting the railway route between the points named :—

	Distance.		No. of buses.
	By road.	By rail.	
Poona—Baramati	71	76	12
Poona—Ahmednagar . . .	77	99	40
Sholapur—Barsi	36	71	10
Sholapur—Pandharpur . . .	47	77	20

In three of these cases the milage of the railway is such that we fear it cannot reasonably hope to compete with the buses, more especially when a junction is encountered on the rail route imposing a change of train on passengers and all the inconvenience of waiting for the connecting train. In the latter two instances the railway admits that, although the buses short-circuit the railway, they act also to some extent as feeders inasmuch as they probably bring passengers to the railway from outlying towns and villages on the road. In the estimated losses given in the next paragraph, it should be borne in mind that those due to the short-circuiting services mentioned above are included with the losses due to parallel services.

14. *Estimated losses arising from bus competition.*—Like other administrations the Great Indian Peninsula Railway emphasizes the difficulties of framing any accurate estimate of the losses arising from motor bus competition, principally because of the severe trade depression which has supervened during the last two years. Moreover, bus services are difficult to check unless staff are placed on special duty for the purpose. The railway has, however, organized a small special branch for dealing with the problem. Mr. J. T. Day, who was deputed by the Great Indian Peninsula Railway to travel with us while we were in the area served by that system, has recently been entrusted with the special duty of investigating bus competition, and he has under him traffic canvassers and inspectors watching the competitive bus services.

The railway states that there are 670 competitive buses in operation in the area served by the system and calculates that approximately 4,370,400 passengers annually use these buses, producing earnings amounting to Rs. 27,34,000. These figures are based on periodical checks undertaken from time to time. It is admitted that this money would not all have found its way into the railway revenue had there been no buses. Previously there was much short distance travel by country carts, ekkas, tongas, etc., and it is clear that buses have created a certain amount of new traffic. The railway considers that 25 per cent. might be deducted from the above figures on account of traffic previously carried by country vehicles and new traffic created, and that the balance, *viz.*, 3,277,800 in passengers and Rs. 20,51,175 in earnings, might possibly

represent the annual loss the railway is now incurring owing to bus competition.

The railway claims that this figure is, to some extent, substantiated by other checks which have been made. It is stated that the effects of bus competition only came to be realized in the years succeeding 1927-28. Accordingly the latter year is regarded as the last normal year on the Great Indian Peninsula system generally, prior both to trade depression and motor competition. Motor buses principally affect third class earnings and the number of third class passengers and earnings for the years 1927-28 and 1930-31 for the whole system are as follows :—

Great Indian Peninsula Railway—Numbers of third class passengers and earnings.

	Nos.	Rs.
1927-28 . . .	42,023,207	3,53,28,211
1930-31 . . .	34,952,109	2,85,82,699
Total decrease .	7,071,098	67,45,512
	or 16%	or 19%

The decreases combine, of course, the effects of trade depression with motor competition, and it is therefore necessary, if possible, to separate these. The Great Indian Peninsula have attempted to do this by taking out comparative earnings for 1927-28 and 1930-31 on sections of the line unaffected by motor competition—a method which was also adopted by the North Western Railway—and it has been found that the average decrease in numbers is 9 per cent. and in earnings 13 per cent. It is therefore considered that the 16 per cent. decrease in numbers given in the comparative figures above is made up of 9 per cent. due to trade depression and 7 per cent. due to motor competition. Similarly the 19 per cent. in earnings is made up of 13 per cent. due to trade depression and 6 per cent. due to motor competition. Six per cent. of Rs. 35,33,28,211 is Rs. 21,19,692 as compared with Rs. 20,51,175 arrived at by checking the competitive buses, and the passengers they carry. We think that Rs. 20½ lakhs might be reasonably assumed as the present annual losses of the Great Indian Peninsula Railway owing to motor competition, and of this figure (which of course is for the whole Great Indian Peninsula system) about Rs. 7½ lakhs would represent the losses in the Bombay Presidency.

15. *Steps taken by Great Indian Peninsula to meet bus competition.*—The Great Indian Peninsula reports that the following measures have been taken to meet the competition :—

(*a*) *Revision of Time Tables.*—The timings of branch and feeder trains are, when possible, rearranged to meet the needs of short distance passengers; leading commercial bodies in the large towns, and district officials

at district headquarters being consulted as to the convenience of the time tables. The speed of trains has, when possible, been increased, and additional stops have been given to express and mail trains to pick up and set down passengers in areas where competition is severe.

(*b*) *Intelligence services.*—As mentioned already, the Railway has an officer in the Commercial Department whose duties include periodical surveys of motor bus operation, and under this officer are traffic canvassers and commercial inspectors who watch bus services and report at what hours buses run with a full complement of passengers. If there is reasonable chance of an extra train paying, it is put on at these hours. Careful statistics of traffic are kept, sometimes from month to month between stations on sections affected by motor competition, and when decreases are noticed careful local enquiries are made to see whether the competition can be met.

(*c*) *Reduction of fares.*—Fares have been reduced, and cheap return tickets introduced ; and third class tickets have been made available by mail and express trains. This has, with few exceptions, regained some of the lost traffic ; in some cases it has not succeeded and the reductions have been withdrawn.

(*d*) *The provision of halts.*—Halts have been opened or are under contemplation on the light railways.

(*e*) *Co-ordination between road and rail services.*—This method has been adopted between certain out-agencies served by Talegaon and Bombay and has been very successful in meeting the road competition. Further proposals of the kind are under consideration in connection with the Nasik Road. Mumbra and Sholapur stations. We would commend the arrangement to other railways, although we are aware of the difficulties of introducing it in areas where the owner bus driver prevails. The railway has also arranged to issue road tickets at the Victoria Terminus, Bombay, on behalf of the Panchgani and Mahableshwar Road Transport Company. To assist the owner of the private car, reduced rates for the carriage of motor cars from Bombay to Poona and back have been quoted and this has resulted in extra traffic in motor vehicles coming to the railway.

16. *Parcels and goods traffic by motor transport.*—The Great Indian Peninsula Railway reports that considerable competition has sprung up in fruit, vegetables and toddy by motor transport between certain up-country stations and Bombay and, to meet this, special rates have been quoted by the railway. The railway has recently opened near the Reay Market, Poona, a receiving office for parcels, and this locality has been chosen because this market is the starting point of many of the bus services.

As regards goods traffic, the railway has introduced special rates for rice from Asangaon to Bombay, from Ghoti to Nasik, and Nasik to Manmad.

No estimate has been given us of the loss that the railway is incurring owing to the diversion of parcels and goods traffic to the road.

B.—Bombay, Baroda and Central India Railway.

17. *Competitive bus services on parallel routes.*—The Bombay, Baroda and Central India Railway have furnished us with the following particulars of motor bus services running in competition with the railway in the Presidency.

Service.	Miles.	No. of buses.
Navsarai—Gandevi	16½	1
Nandurbar—Dondaiche	21¼	4
Dondaiche—Nardana	20½	5
Broach—Jambusar	29½	2
Ahmedabad—Sabarmati	5	3
Ahmedabad—Sanand	14	6
Anand—Nadiad	13	22
Vasad—Borsad	13	5
Nadiad-Kapadvanj	28	13
Godhra—Kharsalia	7	4
Godhra—Derol	15	
Godhra-Halol	24	1
Godhra—Shivrajpur	33	2
Dakor—Umreth	5	7
Dakor—Savalia	13	1
Naroda—Ahmedabad	5½	14
Sarkhej—Ellis Bridge	7	15
Baula—Ellis Bridge	21	4
Dholka—Ellis Bridge	29	2
		111

Some of these routes are so short that we think it is obviously impossible for the railway to compete, and no service has a range as long as 50 miles.

18. *Short-circuiting services.*—The following are the short-circuiting bus services affecting the Bombay, Baroda and Central India Railway in the Presidency :—

Service.	Miles.	No. of buses.
Viramgam—Mandal (Jhund)	16	4
Anand—Borsad	22	14
Mehmedabad—Mahudha	12	5
Dakor—Kapadvanj	58	8

The distance by road between these points is such that we think there is little chance of the railway being able to compete, especially in those cases where there is a junction *en route*.

19. *Estimated losses to the Bombay, Baroda and Central India Railway from motor competition.*—The Bombay, Baroda and Central India Railway undertook a check of competitive motor bus services on one day in October last, and ascertained the carrying capacity of the buses. It was then assumed that the buses get a full complement of passengers and perform daily trips varying in proportion to the distance of the route. Finally, it was also assumed that the buses run throughout the year. The railway fare between the two points has been taken and this, in conjunction with the other factors mentioned, places the loss estimated by the railway, throughout the area served by it, at about Rs. 35 lakhs.

The railway considers that this estimate is a reasonable one inasmuch as the check made in October was undertaken just at the conclusion of the monsoon, when the number of competitive buses on the road was considerably less than at other periods in the year. For instance, the competitive buses running in the Bombay Presidency proper at the October check numbered 112, whereas when a check was made in June the number was 160. As in other cases we would observe that the estimate is approximate and conjectural and in the time at our disposal we have had no means of cross checking it, but the figure submitted at least shows that bus competition throughout the area served by the railway has assumed considerable proportions.

The railway serves a large area of country outside the Bombay Presidency, about two thirds of its route milage penetrating Indian States. To obtain a figure representing the losses in the Bombay Presidency proper, the competitive bus services running in the Presidency have been taken and the daily loss due to these is placed at Rs. 1,822 and annually to Rs. 6,65,030, but we would emphasize that this estimate too can only be regarded as very approximate. The improvement of roads in the Presidency, coupled with the revival of trade, will doubtless intensify the competition.

20. *Measures taken by the Bombay, Baroda and Central India Railway to meet the competition.*—The Bombay, Baroda and Central India Railway reports that on two of the narrow gauge sections where motor competition has been most intensely felt, attempts have been made to recover traffic to the railway by reducing fares and putting an additional train services where necessary. So far as concerns the Broach-Jambusar Railway (an integral portion of the Bombay, Baroda and Central India Railway) it is claimed that these measures have effectively disposed of bus competition. On this line there are only two classes and the lower class fares were reduced from 4½ pies to 2½ pies in February 1930, and the upper class fares from 18 pies to 12 pies in the following October. We give below the number of passengers and earnings therefrom with the average earnings per passenger for three years—1929, 1930 and 1931—and from these figures it would appear that while the numbers of passengers carried considerably increased, the average earnings per passenger have

decreased, while further expenditure must have been incurred on extra train milage to carry the increasing number of passengers offering.

—	No. of passengers.	Passenger earnings.	Average earnings per passenger.
		Rs.	As. P.
1929	150,894	47,427	5 0
1930	506,902	1,02,125	3 0
1931	557,485	1,14,968	3 4

Similar measures were adopted at the same time on the Nadiad Kapadvanj 2′ 6″ gauge line, operated by the Bombay. Baroda and Central India Railway on behalf of Messrs. Killick Nixon and Co., and we give below the figures for this line :—

—	No. of passengers.	Passenger earnings.	Average earnings per passenger.
		Rs.	As. P.
1929	324,760	1,02,155	5 0
1930	350,001	86,158	3 11
1931	457,145	88,108	2 11

From these it would appear that the effect of reducing the fares on this branch has not been so successful as in the case of the Broach-Jambusar Railway, but the Bombay. Baroda and Central India administration claim that the reduction of fares has at least stopped a further decline in traffic, and has, in fact, re-diverted some passengers to the railway.

The Bombay, Baroda and Central India Railway also state that to meet motor competition on the Tapti Valley Railway halts were opened, the passengers entraining at such halts having tickets issued to them by the guards of the trains. The system was not found to be satisfactory and it was accordingly decided to place booking clerks at the halts and when this was done a considerable increase in traffic was noticeable, in some cases amounting to as much as between 55 and 65 per cent.

21. *Merchandise by motor transport.*—The railway report certain case of merchandise being carried by competitive lorries. Ground-nuts have been carried by road from Kapadvanj to Nadiad and Kapadvanj to Anand, and, although when this traffic sprang up, the cost of carriage by road was considerably cheaper than by rail, one of the factors contributing to the difference was the terminal tax charged by Nadiad Municipality. The railway has since reduced its rates between the points named and this had the effect of considerably increasing the railway traffic. Further, the Nadiad Municipality has since introduced terminal taxes on traffic carried by road as well as by rail.

C.—Madras and Southern Mahratta Railway.

22. *Competitive bus services.*—The Madras and Southern Mahratta Railway have recently undertaken a survey of the public motor transport activities now being run in competition with the railway. At present there are about 650 buses running competitive or semi-competitive services throughout the area served by the railway, and excluding from these those running on roads wholly in States and in Portuguese West India, there are about 129 plying in the Presidency. The most extensive competition is experienced between Dharwar and Hubli (12 miles) and Hubli and Gadag (36 miles). The number of motor buses running on these roads is 20 and 40 respectively. Some of the competitive buses have a comparatively long range as between Kolhapur and Poona (130 miles), Bagalkot and Belgaum (80 miles), Bagalkot and Bijapur (50 miles) and Dharwar and Kolhapur (110 miles).

22-A. *Estimated losses.*—The Madras and Southern Mahratta Railway have framed an estimate of the losses incurred by the railway due to motor competition on the basis suggested in Mr. MacLean's report, *i.e.*, that Rs. 10 per day per bus may be the loss to the railway in the case of competitive services. The railway administration considers that the average daily bus earnings are much higher than this, amounting to as high a figure as Rs. 50, but it is recognized that this does not all represent traffic diverted from the railway, as buses have created traffic of their own; again, though buses run with a high percentage of seats occupied, some allowance must be made for empty running. Further it cannot be assumed, especially in some parts of the Bombay Presidency served by the railway, that the competitive buses are on the road every day in the year. Making allowance for these considerations, the railway considers that the Rs. 10 basis is a reasonable one and, with 129 competitive buses running in the Bombay Presidency, the losses suffered by the railway may be estimated at Rs. 4,70,850.

23. *Measures adopted to meet competition.*—The Madras and Southern Mahratta Railway reports that in order to meet the competition, much has been done to re-arrange time-tables so as to provide the public with more convenient services and special attention has been paid to junction connections.

The Railway has also under consideration the running of light trains or, possibly, some smaller self-propelled unit, but a decision has not yet been reached as to which design to adopt.

D.—Barsi Light Railway.

24. *Effect of competition.*—The Agent and Chief Engineer of the Barsi Light Railway points out that a road runs parallel with the Railway for practically the whole of its length, while for 22 miles between Kurduvadi Junction and Barsi the railway actually runs on the road. He was unable to furnish us with any estimates of losses occasioned to the railway by motor competition. He states that the general trade

depression has hit the buses to such an extent that there is less competition now than there was. There is considerable unemployment among the buses, and in some instances the bus services have become so irregular that the railway is actually contemplating the cancellation of trains originally put on to meet the competition.

Other points brought to our notice by the railway are :—

(1) The drop in passenger earnings of the railway last year was occasioned chiefly by the political situation and the decreased export of ground-nuts, and was not due so much to motor competition.

(2) Competitive bus fares are not usually less than the railway fares ; in fact it is reported that when bus passengers are already some miles on their journey larger fares are exacted from them.

(3) Overcrowding is rife, and the police are unable to cope with this.

(4) Competitive buses are not usually organized.

(5) Sentinel locomotives have done much to retain passengers to the railway.

It would appear from the above that the Barsi Light Railway has perhaps not suffered from bus competition to the same extent as other light railways. We think, however, that the improvement of the road alongside the Railway, the better organisation of competitive buses, and the general improvement of trade would intensify the competition.

E.—Other Light Railways in the Bombay Presidency.

25. *Importance of Light Railways from the public point of view.*—Though they necessarily operate in a very confined sphere of activity, compared with the large railway administrations, it must not be forgotten that the prosperity, or otherwise, of light railways is none the less a matter of public importance, as all of them are guaranteed a fixed minimum rate of interest on their capital, either by the Secretary of State, or by the Provincial Government, or by a District Board. Motor competition has become a serious question with many of them, and has, proportionately affected some of them far more than the larger railways.

25-A. *Discussion with Messrs. Killick Nixon & Co.*—Messrs. Killick Nixon & Co., who are Managing Agents of certain light railways in Bombay, the Central Provinces, and the Punjab, have their registered offices in Bombay, and while in that city we arranged to interview their railway representatives and discuss with them (1) the letter, dated 12th August 1932, they addressed on behalf of the Managing Agents of all light railways in India to the Chief Commissioner of Railways (copy of this letter is printed as Appendix 2), and (2) their experience and opinions in connection with the light railways in which they are interested in the

Bombay Presidency. At the meeting the following gentlemen were present :—

Mr. R. G. Lowndes, Partner, Killick Nixon & Co., Bombay.

Mr. R. Trevor Robinson, Assistant, Killick Nixon & Co., Bombay.

Mr. N. N. Ayyangar, B.A., L.C.E., M.I.E., Deputy Secretary to Government of Bombay.

Mr. H. P. Ball, General Traffic Manager, Bombay, Baroda and Central India Railway.

Mr. J. T. Day, Senior Assistant Traffic Manager, Officer-in-charge Survey and Motor Bus competition, Great Indian Peninsula Railway.

At this meeting the four points referred to in the letter were discussed. These points are :-

(1) The possibility of increasing the speed, permitted on light railways.

(2) The introduction of cheaper fares.

(3) The unfair burden of Octroi and Terminal Taxes.

(4) The need for keeping a census of road borne traffic.

As regards (1) Mr. Ball of the Bombay, Baroda and Central India Railway pointed out the difficulties in the way of increasing the speed over the Gujerat Light Railways, unless the standard of permanent way was greatly improved, and he stated that even if this were done, the over-all time would not be very much reduced. The maximum speed permissible on the Gujerat Light Railways was 20 miles an hour, and the actual time taken by a typical train on one of the branches—28 miles—is 1 hour 48 minutes. By raising the speed to 30 miles an hour, the over-all time would be reduced to 1 hour 26 minutes, but Mr. Ball believed that so small an improvement would have little effect on the traffic carried while it would necessitate considerable strengthening or even relaying of the track, the cost of which must be considerable.

(2) As regards fares, the Bombay, Baroda and Central India Railway have twice reduced fares on the light railways. The effect of these reductions has already been discussed in paragraph 20 above.

(3) As regards Terminal Taxes, we have already touched on this matter in paragraph 21 above in connection with Nadiad, where these taxes are now being collected on road borne as well as rail-borne traffic.

(4) As regards a proper check being made of road traffic, we feel that this is a matter requiring urgent attention. There are several authorities interested in the density of motor traffic passing along the roads, as for instance, the civil authorities, the police, the authorities responsible for the upkeep of the roads, and the railways, and we think it ought to be possible to arrange in the interest of all these a co-ordinated census of motor transport using these roads.*

* We shall refer to this subject in the general part of our report.

26. *Possibility of Light Railways operating motor transport.*—Mr. Lowndes when asked whether his firm had considered the possibility of light railways operating motor transport, as the Managing Agents of the Bengal light railways had for years been pressing to be allowed to do, stated that his company viewed the proposal with considerable misgivings for the following reasons :—

(1) Possible loss of revenue owing to the difficulty of keeping a check on passengers carried by such services.

(2) The possibility of increased taxation or toll charges if a big concern like the railway were to run motor services.

(3) The wastage in petrol and stores, etc., which do not arise in connection with buses driven by their owners.

He pointed out that the proprietors of motor transport run their buses to a stand still, making no allowance for depreciation or repairs, and they get drivers at rates at which a railway company would never be able to secure them. Mr. Lowndes also quoted the Agent of the Great Indian Peninsula Railway who had given the firm the following reasons against the railway operating motor transport :—

(1) Heavy overhead charges for upkeep of tyres, etc.

(2) Necessity of insurance against third party claims.

(3) Limitation of seating capacity.

(4) Need for giving the staff provident fund and other benefits.

Mr. Lowndes was then asked whether his company would be prepared to reconsider the proposal if the suggestion made to us by the Indian Roads and Transport Development Association was carried out (see para. 38, General Report) and light railways were given a monopoly for a certain period of years on the roads parallel with their lines. Mr. Lowndes admitted that the possibility of a monopoly would considerably modify the position and on this basis his company would be prepared to reconsider the proposal.

Mr. Lowndes also suggested that higher license fees should be charged from motor vehicles operating on roads parallel with railway, and he further remarked that light railways could probably compete successfully with motor transport on parallel roads if motor buses were operated commercially and charged economic fares.

27. *Opinions on Railways operating motor transport.*—During our enquiries in the Bombay Presidency we gathered that there is a certain amount of official opinion in favour of railways operating road motor transport. For instance, when we were discussing with Mr. P. B. Bowers, Chief Engineer and Secretary to Local Government, Public Works Department, the question of railway facilities in the Nira river area, he suggested that, in the event of railway communication being impossible, the Madras and Southern Mahratta Railway might be invited to clear the agricultural produce from the Nira right bank by motor transport

between this area and Lonand Station. Again, at the meeting convened by the Commissioner of the Southern Division at Belgaum, we found that the Collector of Dharwar, and the Superintending Engineer of the Circle were both in favour of railways running road motor services. We discussed this question also at the meeting convened by the Commissioner of the Central Division, Poona, and found that there was a certain amount of opinion in favour of it, but the meeting was generally opposed to the suggestion if it involved a monopoly although it was admitted that a controlled monopoly would not be so objectionable

CHAPTER IV.—MOTOR TRANSPORT, ITS TAXATION, REGULATION AND CONTROL.

28. *Taxation and tolls.*—There is no provincial motor vehicle tax as such. On a 30-cwt. vehicle the license fee is Rs. 32, the annual registration renewal fee apparently amounts to Rs. 120; while tolls, prevalent in certain parts, are estimated by the Bombay Branch of the Indian Roads and Transport Development Association—*vide* Appendix 3—to amount to Rs. 644 and Rs. 2,084 per annum for a passenger bus and goods vehicle respectively.

29. *Number of commercial vehicles and their employment.*—As far as we have been able to ascertain there are about 4,750 commercial vehicles in the Presidency. In some places the number of buses licensed to ply on any route or in any area is limited, but this is not always so. In parts of the Presidency moreover the keenness of the competition as revealed by the level of fares, often said to be about 5 pies per passenger-mile and less, suggests that there may be considerable unemployment, and that, owing partly no doubt to the present depression reducing the number of people prepared to travel, there are too many buses on certain routes.

30. *Desirability of closer control.*—We were able to obtain no very clear idea of the extent to which motor bus services in general fall short in public estimation of the reasonable requirements, and might therefore be subject to closer control to ensure a better service. At Ahmedabad we gathered the impression that, while buses are often restricted as to the number plying on any route, overcrowding was common and bus travel uncomfortable, but that cheap fares are a great boon and can assuage considerable discomfort, so that anything tending to increase fares would be viewed with no little suspicion. In Belgaum, again we heard complaints that there were too many small-owner buses in competition leading to racing and other evils and that while the development of rural services needed every encouragement and unnecessary interference should be avoided, the numbers on any route might be restricted with advantage and there might be some insistence on time-tables and punctuality, and possibly passenger risk insurance should be prescribed. In Poona it appeared that, in the Central Division, the standard of driving is good, and the regulations generally adequate, but might be more strictly enforced regarding speeds, overloading, and possibly passenger insurance. Generally, opinion in the Presidency, while favouring the minimum of interference, appears to be that some further control is desirable.

31. *Zoning.*—On the question of "zoning" again we did not elicit any very definite opinions. We put the question in the form that since the public eventually pays for all forms of transport, and since money spent on roads parallel with railways is money taken from possible developments elsewhere, competitive motor transport might be restricted to zones where it is undoubtedly superior to the railway in point.

of convenience. In Ahmedabad we gathered that the general condition of roads does not, at present, permit competition much beyond a zone of 50 miles and so the question had no immediate application. In Belgaum we understood some opinion to favour competition with railways as being healthy and good for these, while in Poona, of those present at the meeting convened for us by the Commissioner, seven were in favour of zoning to about 50 miles, and six against.

32. *Present rates of fare.*—We have, in Appendix 2, reproduced an analysis of the cost of operating a 30-cwt. motor vehicle in various circumstances, as supplied to us by the Bombay Branch of the Indian Roads and Transport Development Association. To run a 30-cwt. bus which may carry 20 to 23 passengers when fully loaded, is estimated to cost As. 5·5 to As. 6·02 per mile, if allowance is made for all charges and depreciation. These buses cannot run full all the time and an average load of 15 would be as much, we think, as could be expected. To earn six annas per mile from 15 passengers the fare would have to be about $4\frac{3}{4}$ pies per passenger-mile. At Appendix 4 we reproduce a statement of the number of buses running and the fares charged in various parts of the Presidency. From this it appears that fares are usually above the economic level, but that, where competition is keen, rates as low as 3 pies per passenger-mile are charged which appear to be below the economic fare and suggest that money is being lost by many owners.

33. *Wear and tear on roads.*—It appears to be the case that many roads in the Presidency are deteriorating owing, among other things, to the wear and tear of bus traffic. If buses are overloaded and are driven too fast, or where there is open competition and no agreement among the owners, when there are more buses running than the traffic requires, the tax-payer is being put to unnecessary expense.

34. *Conclusion.*—Our enquiry was necessarily superficial, but we believe that a fuller examination would show that, from many points of view, a more strict control of rural buses would be an economy and result in greater comfort and convenience.

CHAPTER V.—BRANCH LINE PROJECTS.

35. We have, as far as possible, discussed with the representatives of the local Government and the railway administrations concerned the branch line projects contemplated in the Presidency with a view to ascertaining whether roads would better serve the purpose. We give below comments on the various projects.

A.—Great Indian Peninsula Railway.

(1) *Balapur-Shegaon Railway—5'-6" gauge—45 miles.*—This proposal was discussed at the meeting held by the Commissioner of the Central Division, Poona. It was pointed out that the area around Shegaon is already well served by roads, and that a railway, in view of the development of motor transport, would probably not prove remunerative. In connection with this branch, an extension from Shegaon to Bodhegaon was also under consideration, but these points are already connected by a good road and it is considered that nothing further is required.

(2) *Diva-Dasgaon Railway—5'-6" gauge—93 miles.*—This railway penetrates the Konkan and, it constructed, would presumably form the first stage of a trunk railway route down the coast. Part of the alignment would run parallel with the metre gauge line projected by the Madras and Southern Mahratta Railway from Karad to Ulva *vid* Chiplun. A trunk road, the improvement of which already finds a prominent place in the Bombay road programme, runs parallel with both these projects. If this road is improved, it will probably serve the needs of the area adequately for some time.

(3) *Baramati-Baura Extension—2'-6" gauge—42 miles.*—This railway has for its object the development of the area served by the Nira left and right bank canals. The Great Indian Peninsula administration considers that, if capital were available, it could be better utilized on more urgent projects, but when we discussed the proposed line at the meeting held by the Commissioner of the Central Division, Poona, the latter pointed out that the Government had incurred an expenditure of 4 crores on the Nira river irrigation works, and railway facilities were considered necessary to ensure a proper return on the outlay. We found too that there was some local demand for the railway, though no very definite decision was reached as to whether a road system would not be sufficient. We had an opportunity of discussing the matter with Mr. P. B. Bowers, Chief Engineer and Secretary, Public Works Department, Bombay, and he also stated that, in his opinion, railway facilities were needed to develop the area so as to enable full benefit to be reaped from the expenditure on irrigation.

The Managing Agents of the Dhond-Baramati Railway are Messrs. Shapoorji Godbole and Co., Bombay, and this firm is interested in the

extension of the Dhond-Baramati Railway into the Nira area for the purpose of serving the sugar refineries which, it is claimed, will spring up there if only railway communication is provided. The firm have approached the local Government on the subject, and the local Government in turn has placed the matter before the Railway Board.

While we were in Bombay, we discussed the subject with Dewan Bahadur Godbole, head of Messrs. Shapoorji Godbole, and he assured us that, given railway facilities, a number of sugar refineries would spring up in the area, and that he was of opinion that roads would not serve the purpose, for, although the map shows that a road system exists, the roads he said, were very bad and the cost of bringing them up to standard would be very great. He considered that the Dhond-Baramati line should be extended to Pandharpur and possibly that another branch should cross the Nira river in the direction of Phaltan. He considered that capital could be raised if a guarantee of 5 per cent. were forthcoming.

The area on the right bank of the Nira is, we understand, in the zone of the Barsi Light Railway, but that administration have admitted the impossibility of financing a railway between Pandharpur and Lonand.

From the various discussions we have had on the project we are satisfied on the following points :—

(i) that this is a case for a joint road and rail survey being made in the area ;

(ii) that this survey should be undertaken urgently in order to enable the firms who propose to start sugar refineries to take advantage of the present protective tariff ; and

(iii) that the proposed survey should be undertaken jointly by an officer of the local Government conversant with marketing conditions in the area and by a railway engineering officer unconnected with the Great Indian Peninsula, Dhond-Baramati, Barsi Light or Madras and Southern Mahratta Railways.

These two officers, after jointly surveying the area, should submit a report stating what communications, in their opinion, are necessary adequately to serve the area ; and, if railway facilities are needed, on what gauge the railways should be constructed. As the matter is considered urgent by the local Government and those interested, we have, in anticipation of our report, made this suggestion to the Railway Board.

(4) *Other projects of the Great Indian Peninsula Railway.*— The Great Indian Peninsula Railway had at one time several other branch lines projected in the Bombay Presidency, but these have virtually all been abandoned as unnecessary, and we think no further reference to them is required.

B.—Bombay, Baroda and Central India Railway.

36. The following railway projects in the Bombay Presidency are under contemplation by the Bombay, Baroda and Central India Railway :—

(1) *Modasa-Ratanpur-Dungarpur—metre gauge—45 miles.*—This line has not yet been surveyed for want of funds. There is, however, a motorable road for part of the distance. As there is we believe considerable demand for a road or other outlet for Dungarpur and Banswara, the whole question should be considered as one.

(2) *Thasra-Virpur—Narrow gauge—33½ miles.*—This line was surveyed in 1927 and was then expected to prove remunerative. A good road short-circuits the route for part of the alignment and, since the survey, motor transport has developed to such an extent that it is advisable to reconsider whether a road would not adequately meet the needs of the area.

(3) *Nandurbar-Khetia—29½ miles.*—This scheme was surveyed in 1927, and was estimated to yield 3·64 per cent. if built to broad gauge standard and 6·84 per cent. if built to narrow gauge standard. A good road exists for part of the alignment, and the railway would have to cross the Tapti river. In view of the development of motor transport we think this line should be re-investigated especially in view of the difficulties that narrow gauge lines are experiencing in competing with motor traffic.

(4) *Bulsar-Dharampur—17 miles.*— It was claimed in 1929 that this would produce 5·76 per cent. if built to broad gauge standard, but a metalled road runs alongside the alignment which, we may point out, is partly in the Dharampur State.

In addition to the above schemes, the railway has surveyed a large number of other projects which have been postponed or virtually abandoned as being unlikely to prove unremunerative.

C.—Madras and Southern Mahratta Railway.

36-A. The Madras and Southern Mahratta Railway has, on its programme, a certain number of branch lines in the Bombay Presidency and we offer comments on these below.

(1) *Koregaon-Satara Railway—metre gauge—12 miles.*—This scheme has been under contemplation for many years and we were informed by the administration that the local Government have deferred further consideration of it for five years from May 1929. There is already a good road between the two points and, in view of this, it is hardly likely that a railway would prove remunerative.

(2) *Karad-Chiplun-Ulva Railway—metre gauge—207 miles.*—This scheme would provide a trunk railway in the Konkan, an area at present unserved by railway, and in connection with it we would refer to another

scheme on the Great Indian Peninsula list for running a railway in the same area from Diva to Dasgaon. The alignment of the two projects runs side by side for some considerable distance. The Madras and Southern Mahratta Railway state that a road would not be a suitable alternative for this railway which, besides opening up a country unserved by railways, would provide direct metre gauge connection with Bombay and would probably assist in the industrial utilization of electrical power on the ghats.

(3) *Raibag-Bagalkot Railway—metre gauge—76 miles.*—The railway points out that this line traverses four states in the Bombay Presidency, and there would be difficulty in financing it. Roads exist in the area and there are grounds for considering a good class feeder road as an alternative. At the meeting held by the Commissioner of Southern Division, Belgaum, we gathered however that there is a strong local demand for the construction of this line, but we consider that at present a road would probably serve the area adequately, and those at the meeting who favoured the railway admitted that, if the Hubli-Saundatti-Belgaum Railway referred to below were constructed, the construction of the Raibag-Bagalkot line could probably be deferred.

In the opinion of the local authorities and the railway administration, roads would adequately serve the areas which would be opened up by the following proposed branches :—

(4) Raibag-Niphani Railway—metre gauge—32 miles.

(5) Bagalkot-Hungundi-Ilkal Railway—metre guage—37 miles.

(6) Bijapur-Talikote Railway—metre gauge—60 miles.

(7) Dundur-Nargund Railway—metre gauge—21 miles.

(8) Haveri-Havanur Railway—metre gauge—20 miles.

(9) Athni-Shebdal Railway—metre gauge.

(10) Hubli-Sirsi Railway. Metre gauge—68 miles.

In the case of the Hubli-Sirsi Railway, it is considered that a road in continuation of the Alnavar-Dandeli Branch Railway to Sirsi would sufficiently develop the area.

(11) *Hubli-Saundatti-Belgaum Railway—metre gauge—80 miles.*—This project forms an important alternative route between Hubli and Belgaum opening an area not touched by railways and serving Saundatti and an important pilgrim centre. A road would not serve as an alternative.

At the meeting held by the Commissioner of Southern Division, Belgaum, there was a strong demand for the construction of this line, although the Poona-Bangalore road runs between Hubli and Dharwar to Belgaum and the proposed railway would, to some extent, be parallel with it. The present railway route between Hubli and Belgaum is circuitous and traverses the Kanara jungles for the greater part of its length, whereas the proposed line would serve populous centres.

CHAPTER VI.—PROGRAMME OF ROAD DEVELOPMENT.

37. *Views of the Great Indian Peninsula Railway on the road policy.*—The Great Indian Peninsula Railway points out that it would appear from the programme of works which the local Government desire to be financed from the Road Development Account, that it is the intention of the local Government to improve the existing trunk roads, build connecting links and provide bridges on them in order to make them motorable. As in the majority of cases, the trunk roads run parallel with the main lines of the rail increased competition from motor transport must be anticipated. The roads referred to are as follows :—

(*a*) Bombay-Poona-Ahmednagar-Aurangabad,

(*b*) Bombay-Bhusawal-Edlabad-Nagpur,

(*c*) Bombay-Agra,

(*d*) Bombay-Poona-Sholapur-Hyderabad,

(*e*) Bombay-Poona-Bangalore.

The railway points out that intense motor competition is already being experienced on some sections of the above roads.

38. We have shown that one-third of the milage of metalled roads and practically the entire milage of other roads is in charge of local bodies. But the development programme particulars of which have been furnished to us, is in respect of provincial roads only. This programme, which we reproduce in an abbreviated form at Appendix 5, is based upon a recent classification of roads in the Presidency in accordance with that adopted by the Road Conference for the purposes of the road development account as follows :-

Class I.—Roads of importance from the point of view of more than one province or State or of more than one Commissioner's Division, or in Madras, more than one Revenue District within the province.

Class II.—Roads of importance from the point of view of more than one Collector's District, or in Madras, more than one Revenue Division, and also roads serving as important feeders to railways, waterways and to Class I roads.

Roads of Classes I and II will be eligible for grants from the Central Road Fund provided they form part of a consistent plan of road development. Any other schemes submitted by local Governments which do not fall within Class I or II should be considered on their merits.

In addition, these roads have been classified according to probable traffic intensity, at present or after the first stage improvement, into three classes—heavy traffic, medium traffic, and light traffic. Upon

this classification a programme or list of works in order of priority has been drawn up in great detail showing the name and section of the road, the main classification and that in respect of traffic intensity, the proposed work and, where this has been estimated, the expenditure involved. This programme runs to 123 pages of print and is obviously too extensive for us to reproduce. The summary which we have prepared at Appendix 5, however, shows sufficiently clearly the nature of the programme which is made up of a large number of works in respect of 83 important roads including trunk roads and which amounts, for works to be undertaken in the future, to a total of Rs. 430·43 lakhs in respect of works for which estimates have been prepared, but there are no less than 130 items for which there are none. We venture to make the following suggestions in respect of certain of the projects covered by this programme.

(i) *Bombay-Ahmedabad-Rajputana Road.*—The provision for this, excluding work already in hand, amounts to approximately Rs. 80 lakhs exclusive of a certain amount of necessary work in Baroda State so that probably an expenditure of something approaching Rs. 1 crore in all will eventually be necessary in order to open up through communication between Bombay and Ahmedabad, there being negligible provision in the programme for the work beyond Ahmedabad. Although the road is described as the Bombay-Ahmedabad-Rajputana Trunk Road, the actual alignment beyond Ahmedabad has not finally been agreed upon by the various administrations which would be concerned and moreover a trunk road connection between Gujerat and Rajputana is a matter which could, we think, in any event be considered on its merits irrespective of any connection between Gujerat and Bombay. For the present, therefore, and in the absence of any definite scheme for the Rajputana connection, we consider that this projected trunk road may be considered principally, if not solely, as a connection between Bombay and Ahmedabad. The total length involved is about 350 miles. The road exists in various disconnected sections throughout the whole of the alignment and the expenditure proposed is in respect largely of bridging and also of filling up the gaps at present unmetalled. About two-thirds of the whole alignment, or some 230 miles, would apparently be parallel with existing railways and within 10 miles of them and would connect all the principal populous centres and thus clearly afford increased facilities for road and rail competition. In view of the many other demands for road development in the Presidency and so long as funds have to be found for such schemes from revenue, we venture to think that this scheme may have been considered less as an immediate possibility than as an ultimate objective to be attained in the distant future by piecemeal development, because even if the whole of the share of Bombay and Sind in the Central Road Development Account were to have been applied to this project for the whole of the five years during which this account exists, it would barely have sufficed for the completion of the scheme. In these circumstances we think it permissible to suggest that the ultimate completion of the through road as far as Ahmedabad

has possibly been regarded as so distant a consummation that the inevitable reaction upon the railway may be left for future consideration. If, however, there is in the early future to be any large scale development of roads from loan funds, then the completion of this particular scheme would become a practical objective, the effects of which should, we think, be most seriously considered. We do not suggest that the whole of the proposed road would necessarily adversely affect the railways. From Bombay to Sanjan, for instance, a distance of nearly 100 miles, the alignment is probably so far from the railway as to have little effect upon it, while to the extent to which this section has already developed, new facilities for competition would not now be created. From this point, however, practically for the whole distance to Ahmedabad, the road would be directly competitive, but we are not clear as to the extent to which development on this alignment would be of great local benefit or be necessary for the locality, and to what extent it would be reasonable to suggest that, if there is to be a through trunk road between Bombay, Baroda and Ahmedabad, the project might not be reconsidered in the light of the possibility of opening up some entirely new alignment developing the country at present unserved by road or railway, rather than from that of completing the through communication by filling up gaps in existing roads, which doubtless would be the cheapest means. But we are clear that the investment of such large sums as are in question upon the provision of a trunk road parallel with a main line railway through a relatively very narrow strip of territory between the ghats and sea or between Indian State territories and the sea is a matter which should be very carefully reconsidered if and when the completion of the whole becomes a matter of practical politics and that alternatives should not necessarily be ruled out by the existence of parts of the road on the present alignment.

(ii) *Bombay-Agra Road.*— The programme here involves the expenditure of about Rs. 15 lakhs for the reconstruction of certain lengths of road to meet modern conditions and for bridging and drainage works. This is an important trunk road which already exists and is extensively used, and, so long as there are no restrictions of traffic on it, expenditure of the nature contemplated is ultimately inevitable. The Great Indian Peninsula Railway has raised the objection that the expenditure upon such roads will intensify competition while at the same time absorbing funds which might, from their point of view, be more usefully applied to the provision of feeder roads. All that can be said would be that expenditure of this nature should be considered on its merits along with other demands for development in areas at present deprived of any facilities.

(iii) *Bombay-Poona-Bangalore Road.*—In this case an expenditure of about Rs. 27 lakhs, *plus* an unknown sum in respect of three items for which estimates have not been prepared, is proposed for improvements and bridging upon a trunk road already in existence. Here again much of this expenditure is unavoidable unless traffic is to be restricted or unless serious obstructions in the form of unbridged crossings are to be

allowed to remain on important roads of this nature. Such expenditure must obviously find a place in any scheme of general development. When, however, available resources are directed largely towards these objects there are grounds for the criticism that the lack of balance in the road system is being accentuated.

(iv) *Bombay-Konkan-Goa Road.*—Here an expenditure of some Rs. 40 lakhs is contemplated in an area which has at present neither an adequate road nor a railway; but two railway projects are contemplated, namely, that of the Great Indian Peninsula Railway for a broad gauge line from Diva to Dasgaon and that of the Madras and Southern Mahratta Railway for a metre gauge line from Karad to Chiplun and Ulva, both of which would tap the same country as the proposed trunk road and would presumably be on similar alignments connecting the populous centres. We do not know to what extent existing stretches of road and existing bridges render the road alignment obligatory, but we are clear that to the extent to which any reconsideration is possible the alignment of this road and of one or the other of the projected railways should be considered jointly. Both of these railway projects have in our general report been classified as being schemes which may eventually be required as through connections, and we think it is clear that before any heavy expenditure from loan funds were incurred upon the road every attempt should be made to determine whether or not either of these two railways will eventually be built and if so upon what alignment, because until these points are settled it will not be possible to give adequate weight to the probable effect upon the railway of the projected road.

(v) *General.*—We do not think it necessary to discuss further the various trunk road and other road development schemes comprised in the above programme, and in paragraph 41 below we suggest that in any event the whole scheme of road development might suitably be thrashed out from the point of view of meeting the most urgent needs irrespective of the administrative classification of roads, and from that of co-ordinated road and rail development.

39. *Other road requirements.*—In anticipation of our visit to the Presidency the local Government arranged for further statements to be prepared by local officers regarding road development necessary in the Presidency as a whole. Three statements have been compiled for us as follows:—

Statement I—Showing new roads required to open up areas at present without adequate communications,

Statement II—Showing branch line railways which have been projected but not constructed and where a new or improved road might economically serve the area, and

Statement III—Showing cases where feeder roads are required to afford agriculturists easy access to railway stations.

These statements are in very great detail and while we consider that they will undoubtedly be of great value in the drawing up of any comprehensive plan of road development, we do not feel that they are of a nature which can suitably be included as an appendix to a report of this nature, but we would offer the following remarks regarding them :—

Statement I.—This consists of some 30 schemes for the extension of roads or the provision of new roads but no estimates have yet been prepared. In a number of cases the milage is not stated and it would not be possible for us to estimate even on a rough basis what would be the cost involved. We would remark, however, that from our discussions with local officers it appeared that certain of these proposals might require further consideration and in one or two instances the interests of the railway might be adversely affected by the proposal, and we think that, before these are definitely incorporated in a scheme of development, the railway administration concerned should be consulted.

Statement II.—We have, we think, adequately dealt in Chapter V with the present position regarding pending branch line railway projects, and the alternative proposals for roads included in the statement are available should any comprehensive plan of development be worked out ; but we think that in these as in other cases every attempt should be made to decide what railway projects are likely to be taken up during the next 15 or 20 years as a necessary preliminary to co-ordinated development.

Statement III.—This statement comprises a list of 56 feeder roads which are said to be necessary to afford agriculturists easy access to railway stations. In certain cases these doubtless overlap the demands made by railway administrations alluded to below and as the milage is not stated in a number of cases, it would not be possible for us to estimate even roughly the expenditure which would be involved. These again could form the nucleus for this part of any concerted plan of development.

40. (*a*) *Roads required by the Great Indian Peninsula Railway.*—The Great Indian Peninsula Railway reports the following requirements :—

(1) A proper bridge at Thengode on an important road running from West Khandesh to Lasalgaon station.

(2) Direct road communication involving the construction of a new road 8 miles in length between Niphad station and Vadnera, to bring to the railway betel leaf traffic which is now sent by road to Bombay or to Manmad.

(3) A new road in the neighbourhood of Asangaon from Shenve to Kolkhamb, 11 miles in length, to bring to the railway forest produce grown in the area.

(4) A road, 20 miles in length, from Madha to Vairag.

(5) A road, 8 miles in length, from Boroti to Maindargi.

The Great Indian Peninsula Railway also suggests that the road between Chinchwad, Charoli and Chikoli should be maintained in better order during the monsoon.

(*b*) *Roads required by the Bombay, Baroda and Central India Railway.*—The Bombay, Baroda and Central India Railway reports that in the Bombay Presidency proper, there are no very outstanding needs as regards feeder roads to connect railway stations with the adjacent towns and villages. It should be remembered that about two-thirds of the milage of the Bombay, Baroda and Central India Railway lies in Indian States. The Bombay, Baroda and Central India Railway are, however, making further investigations in this matter, and we were promised that information on the subject would subsequently be given to us.

(*c*) *Roads required by the Madras and Southern Mahratta Railway.*—The Madras and Southern Mahratta Railway gave us a lengthy list of roads required to connect stations with the villages they serve. We attach a copy of this as Appendix 6. It will be noted that about 670 miles of road are involved.

41. *Possibility of drawing up a comprehensive programme.*—It will be seen from the foregoing paragraphs that a very large amount of material is already available from which a comprehensive plan of road development might be drawn up. With the existing administrative classification of roads into provincial and local, the concern of the local Government has been more directly with provincial roads, but we venture to think that the full benefit of a good system of provincial roads cannot be felt unless they are adequately linked and connected up with village and afford the village access both to the road system and to the railway. It seems therefore that when funds are available, and any substantial sums must be "provincial," it would be an advantage if available resources were directed to the improvement of the road system as a whole on the basis of some comprehensive programme for the whole Presidency. We are aware that in the case of provincial roads it is frequently a matter of urgent necessity to strengthen or reconstruct a road in order to enable it to stand up to present day traffic and as an economy, and while expenditure of that nature is inevitable, we think that the claims of local development should also rank for consideration and that, in fact, all available resources should be applied upon an economic plan to the greatest economic needs. The time has possibly come when the method of developing roads almost solely from the trunks outwards should be reconsidered and we would even venture to suggest that in a case of road parallel with a railway, upon which extensive work almost amounting to reconstruction is necessary in order to enable it to carry present day traffic, expenditure upon it should, except of course in the case of trunk roads of vital importance, rank equally with other schemes elsewhere awaiting the provision of funds. We believe that some formula might be evolved as a means for testing the relative economic urgency of expenditure upon roads of different classes. On the one hand there is the question of economy in future maintenance

and, on the other, while perhaps a consideration of the total tonnage in passengers and merchandise likely to be carried by a road would not always be possible, we think that the expenditure involved in any case could be compared with the number of persons likely to benefit therefrom, on the rough measure of the area affected by the road in question and the density of population in that area. Although only 16 per cent of the milage of metalled roads in Bombay is parallel with a railway, yet 60 per cent. of the railway milage has a metalled road parallel; 54, per cent. of the whole area is ' uncommanded " by railways and as there is at present little prospect of further railway development, comprehensive development to fill in the road and railway mesh would be of immense value. Such a scheme would take time to work out and would have to be cautiously carried out so as not to spoil the market, but with railway construction and other public works in abeyance the need and the opportunity for cheap road development coincide. In the *interim* we venture to believe that all possible expenditure in the direction of evolving and testing cheap low grade types of development would be amply repaid when the time comes for launching a large scheme

CHAPTER VII.--SUMMARY OF CONCLUSIONS.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

Owing to fragmentation it is difficult to present an accurate picture of conditions in the Presidency. There are 2,537 miles of railway, and 9,760 miles of metalled road, 6,200 miles of latter being in charge of the Public Works Department. In addition there are probably some 4,000 miles of improved unmetalled road. (Para. 4).

(2) Roads have recently been classified according to administrative importance and to traffic. (Para. 6).

(3) There is one mile of railway for every 30 square miles of area and one mile of metalled road for every 12·2 square miles of area. Taking all roads maintained by public authority, there is one mile of road for every 4·35 square miles of area. 54 per cent. of the whole area is more than ten miles from any railway. There are 1,510 miles of metalled road and railway parallel with each other and within ten miles which represents 16 per cent. of the road milage and 60 per cent. of the milage of the railways. (Para. 8).

(4) Many more bridges are necessary. (Para. 9).

(5) It is agreed that there is considerable saving in the carriage of agricultural produce over a good road as compared with a bad one, but no estimate can be made of the extent of this. (Para. 9A).

(6) There are a certain number of large villages which are not on any public road but this is not on the whole considered to be a serious disability for goods traffic although it is so for passengers. (Para. 9B).

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

(7) The railways serving the province are the Great Indian Peninsula, Bombay, Baroda and Central India, and the Madras and Southern Mahratta and between them they have the following milages: Broad gauge 1,493 miles, of which 789 miles or 49·5 per cent. have a metalled road parallel and within ten miles; metre gauge 804 miles, of which 437 miles or 54·3 per cent. have a metalled road parallel and within ten miles; and narrow gauge 270 miles, of which 225 miles or 83·2 per cent. have a metalled road parallel and within ten miles. (Paras. 10 and 11).

(8) The Great Indian Peninsula Railway report that 221 buses are plying in competition in the Bombay Presidency. (Para. 12).

(9) We think that the losses due to competitive bus traffic on the Great Indian Peninsula Railway in the Presidency may amount to about Rs. 7½ lakhs per annum. (Para. 14).

(10) The Great Indian Peninsula Railway are taking certain steps to meet bus competition and, in particular, have arranged in certain cases for the exchange of traffic with motor bus concerns. (Para. 15).

(11) The Great Indian Peninsula Railway report considerable competition in the carriage of fruit, vegetables, and toddy by motor transport and the steps taken to meet this. There is, however, no estimate of the losses caused to the railway thereby. (Para. 16).

(12) The Bombay, Baroda and Central India Railway are losing on a very approximate estimate some Rs. 6·65 lakhs per annum. (Para. 19).

(13) The Bombay, Baroda and Central India Railway are taking certain measures to meet this competition such as the reduction of fares. (Para. 20).

(14) The Bombay, Baroda and Central India Railway report the carriage of certain class of merchandise by competitive motor transport. (Para. 21).

(15) The Madras and Southern Mahratta Railway have recently carried out a survey of competitive bus services and report some of considerable range such as between Kolhapur and Poona 130 miles, and Dharwar and Kolhapur 110 miles. (Para. 22).

(16) The Madras and Southern Mahratta Railway appear to be losing about Rs. 4·71 lakhs per annum by competition in the Bombay Presidency. (Para. 22A).

(17) The Madras and Southern Mahratta Railway have taken certain measures to meet this competition. (Para. 23).

(18) The Barsi Light Railway does not appear to be suffering to the extent of other light railways. (Para. 24).

(19) We had a discussion with Messrs. Killick Nixon and Company on the question of motor competition with light railways in general. The points discussed were (1) the possibility of increasing the speed of light railways, (2) the introduction of cheaper fares, (3) the unfair burden of octroi and terminal taxes and (4) the need for keeping a census of road borne traffic. (Paras. 25 and 25A).

(20) We discuss the possibility of light railways operating road motor transport. (Paras. 26 and 27).

Chapter IV.—Motor transport, its taxation, regulation and control.

(21) Where there are no tolls provincial and local taxation in the Presidency is not heavy. (Para. 28).

(22) Regarding the control of motor transport, opinion in the Presidency generally appears to be that some further control is necessary but that a minimum of interference is desirable. (Para. 30).

(23) On the question of zoning of motor transport there is considerable divergence of opinion. (Para. 31).

(24) The fares charged by buses in the Presidency are generally above the economic level but where competition is keen uneconomic fares are prevalent. (Para. 32).

CHAPTER V.—BRANCH LINE PROJECTS.

(25) We discuss various Great Indian Peninsula Railway branch line projects pending and have, in particular, drawn attention to the necessity of an investigation into the question of a railway or an improved road to serve the Nira Right Bank Canal area. (Para. 35).

(26) The Bombay, Baroda and Central India Railway have four branch line projects pending all of which should be reconsidered in the light of motor transport development. (Para. 36).

(27) The Madras and Southern Mahratta Railway have eleven branch line projects pending which we discuss. The most important of these is the Hubli-Saundatti-Belgaum line. (Para. 36B).

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

(28) The Great Indian Peninsula Railway point out certain objections to the present programme of the local Government in the matter of road construction. (Para. 37).

(29) The local Government have worked out a very complete programme of works of road and bridge construction and reconstruction, but the cost has only been estimated in part. We consider that the question of the alignment of the trunk road between Bombay and Ahmedabad might, if possible, be reconsidered so as to avoid adding to facilities for competition. In the case of the Bombay-Agra and Bombay-Poona-Bangalore Roads we point out that so long as expenditure is limited to this class of development the lack of balance in the road system is in danger of being accentuated. In the case of the Bombay-Konkan-Goa Road we draw attention to the fact that there are also two railway projects on the same alignment, and suggest that road and rail development should be planned as one. (Para. 38).

(30) The road programme above referred to deals with the main skeleton of the road system and we suggest the possibility of complementary development of roads of more purely local and rural importance. (Para. 39).

(31) We refer to the requirements in the matter of feeder and link roads of the Great Indian Peninsula, Bombay, Baroda and Central India and Madras and Southern Mahratta Railways. (Para. 40).

(32) The possibility of drawing up a general plan of road development comprising all requirements is discussed. (Para 41).

APPENDIX 1.

Particulars in respect of area, comprised in districts having a population density of 100 per square mile and over, in this case the whole Presidency.

Area	77,035 square miles.
Population	21,879,123
Mean density	284

—	Length in miles.	Length per 100 square miles of area.	Area per mile of road or railway in square miles.	Persons per mile of road or railway.
Railways	2,501	3·25	30·8	8,740
Metalled roads	9,400	12·20	8·20	2,325
Improved or motorable unmetalled roads, laterite, moorum, etc.	4,000	..	..	..
Total motorable roads	13,400	17·40	5·74	1,690
Other unmetalled roads	4,200	..	..	..
Total all roads	17,700	23·00	4·35	1,235

Area more than 10 miles from any railway=41,500 square miles or 54 per cent. of total.

Milage of metalled roads and railways parallel and within 10 miles=1,510 miles or 16 per cent. of metalled roads and 60 per cent. of railway milage.

APPENDIX 2.

FROM—THE AGENTS AND MANAGING AGENTS OF BRANCH LINE RAILWAYS IN INDIA,

TO—THE CHIEF COMMISSIONER, RAILWAY BOARD, SIMLA, 12TH AUGUST, 1932.

DEAR SIR,

Motor Competition with Railways.

We, the Agents and Managing Agents of Branch Line and Light Railways in India, are instructed by our Boards of Directors to represent to you the serious decline of traffic and decrease in earnings which has already occurred and is growing worse, and which, in our opinion, is to a considerable extent attributable to competition from motor vehicles plying on adjacent or short-circuiting roads. We are, of course, aware that the matter of road motor competition is one which is seriously engaging the attention of Railway Authorities not only in India but in the United Kingdom and elsewhere, but the loss of traffic on most Railways under our management has already attained considerable proportions and, in the interests of the Companies we represent, we desire to urge that action may be taken without further avoidable delay.

2. We must emphasise that motor competition affects Feeder or Branch Line Railways to a greater extent than the Main Lines. This is due to the former's short lead and slower speeds and to the fact that there is frequently in existence a parallel road to connect the towns for the benefit of whose trade the railway was originally built, to foster which capital was sunk in Feeder Railways before the days of other mechanical traction. The Main Lines are eventually affected also, but not probably to the same extent, since they have the advantage of their longer distance traffic. Government, we need hardly say, are especially interested in the welfare of the Branch Line Railways, as apart from the loss of confidence of the investing public in enterprises which have the backing of Government, they are also financially concerned with the amount of surplus profits they receive or the amount of rebate or guarantee which they may have to pay. We feel, therefore, that in urging the special interests of the Branch Line Railways on behalf of their respective Shareholders, we can justifiably mention the importance of the subject from the view point too of Government's financial interests.

3. In this connection, we attach a statement* of the results for the last few years of several of our Railways, which, we consider, illustrates this point. It will be seen that the numbers of passengers carried have decreased as much in some cases as 54 per cent. in the last 7 years. It will further be seen that in every instance Government have suffered a severe loss and in more than one case, the receipt by them of surplus profits has been turned into a payment of Rebate. The difference in every case is very considerable and the position, in spite of steps taken to arrest the falling off in traffic, tends to become worse.

4. It may be argued that the more recent fall in traffic is largely due to trade stagnation, but it will, we think, generally be considered beyond question that even recently this was not the sole reason, and that road motor competition, undoubtedly, is a factor with which Railways have seriously to reckon. We further submit that when the present trade stagnation shows some sign of abatement, the number of motors and lorries on the roads will tend to increase and it is therefore all the more important that Government should do whatever lies in their power to tackle this problem without delay, failing which, from the Railways' point of view, the position threatens further to deteriorate.

5. We have naturally approached before now the Main Line Administrations by whom our Railways are worked, urging the trial of various remedies, such as the reduction of fares, speeding up of trains, more convenient services and the employment of more suitable types of locomotives or coaches. These have been adopted

* Pages 45 and 46 below

in each case as far as financial considerations permit but not with an appreciable improvement of the position. We consider that more might be done, and in addition to the remedies mentioned, would especially urge the following :—

(i) Increasing the speed limits on the narrow gauge and other Branch Line Railways and so permit of greater speeding up of trains. We believe this might be possible on many lines without a great improvement in their standard.

(ii) Endeavouring to make railway travel more attractive by means of even cheaper fares and the issue of week-end and reduced return tickets, etc., especially on certain fair days and holidays.

In this connection, we regret to notice a tendency to propose a policy of increasing third class fares, with the object of recovering part of the lost earnings. In our view such a policy is most undesirable and apart from the fact that we believe it will only make the position worse, it will undoubtedly prejudice the public in favour of motor competition.

(iii) Action to put a stop to the present differential treatment, which is experienced in several districts throughout India, of Octroi and Town Duty being imposed by Local bodies on rail-borne merchandize and not upon similar merchandize conveyed by road. Local bodies should be given the option of levying these duties on all merchandize entering their limits equally, or abolishing them altogether.

(iv) Devising some means of keeping a census of road borne traffic, in order to determine more accurately than is possible at present the extent of the fall of railway earnings due to motor competition.

6. The question of the development of communications generally in India enters largely into the subject and whilst it cannot be denied, even by those who are directly connected with Railways, that improved road communications must play an important part in the future prosperity of the country, under existing conditions and where roads run more or less parallel to railways, the latter have, we submit, in certain respects to face what might be termed " unfair " competition. For instance, Railways conform to the strict Rules and Regulations embodied in the Indian Railways Act in regard to the comfort and safe transport of passengers, and maintain their rolling stock and permanent way up to a high state of efficiency. On the other hand, the laws dealing with the safety and comfort of passengers by road are sometimes difficult to enforce and it is, in our opinion, essential that there should be a very much more effective control over the running of motor vehicles than appears to obtain at present. Railways are not allowed to give preferential treatment to one trader against another, whereas, as has been found in the United Kingdom, motor buses and lorries " charge what they like, accept and refuse what traffic they like, operate over any road and at any time they like without regard to regularity of service. They choose the cream of the traffic leaving the rest to the Railways." Railways have further to bear all expenses of permanent way, track formation, have in many cases to contribute to the cost of roads and bridges used by their competitors, and have to bear the cost of numerous staff, signal arrangements, etc. Without going into the vexed question as to whether motors contribute a just proportion to the maintenance and cost of roads and traffic control we would submit that if they now claim to be public carriers they must expect to be saddled with some of the burdens and control which such a position entails.

7. We quite recognise that both Railways and roads serve the country's and public's interests and are desirable in the development of the country, and whilst there is no doubt that certain undeveloped areas require opening up and that motors might accomplish this in certain districts where it would not be possible or remunerative to construct a railway, we consider it is very desirable that the interests of railways and especially short feeder railways, should be kept clearly before Government so that road development should proceed on rational and not on competitive lines, that is to say attention should principally be directed to the maintenance and development of such roads only as would act as feeders to existing Branch Line

and other railways. A policy of earmarking funds for this object could not be construed as favouring railways, unduly, as those routes on which competition exists have already a duplicated system, so that the public interest will be served best by attention to those places which are still in need of communications. The lack of policy which appears to exist at present in this respect is, we believe, due to the fact that whereas Railways are a central subject, roads are under Provincial and Local Governments whose revenues are not affected by the loss of railway traffic. We are, of course, aware, that Government are very much alive to the position as it exists to-day and we would suggest that it can only be bettered by the appointment of a Member under the Central Government to be in charge of all forms of transport with a view to the co-ordination of all types of communications, *viz.*:—Railways, Roads, Water and Air.

8. In conclusion, we would most strongly urge that, with a view to tackle the immediate question as to the most economic regulation of traffic as between Rail and Road, a strong departmental or other Committee should be appointed to make an exhaustive enquiry into the whole position. The results of a change in road policy would take a considerable period to bear fruit, and the most important matter to take up now is to endeavour to evolve some means of improving the present position and preventing further deterioration.

9. We desire that we may have an early opportunity of having a discussion with you on this important subject, and shall be very much obliged if you will be so good as to appoint a time in the next few weeks when it may be convenient for you to grant an interview to representatives from our Firms and from the Boards of the companies which we represent.

We shall be obliged if the Railway Board will reply to the Office of Messrs. Killick, Nixon & Co., Bombay.

Yours faithfully,

Managing Agents, The Khulna-Bagirhat Railway Co., Ltd.

Managing Agents, The Larkana-Jacobabad (Sind) Light Railways Co., Ltd.
The Upper Sind Light Railways, Jacobabad-Kashmore Feeder Co., Ltd.
The Sind Light Railways, Ltd.

Agents, The Darjeeling Himalayan Railway Co., Ltd.

Managing Agents, The Darjeeling Himalayan Railway Extension Co., Ltd.
The Hoshiarpur-Doab Branch Railway Co., Ltd.
The Hardwar-Dehra Branch Railway Co., Ltd.
The Mymensingh Bhairab Bazar Railways Co., Ltd.
The Sara Sirajganj Railway Co., Ltd.
Raipur Forest Tramway.

Managing Agents, The Mayurbhanj Railway Co., Ltd.

Agents, The Ahmedabad Prantej Railway Co., Ltd.
The Tapti Valley Railway Co., Ltd.
The Amritsar Patti Railway Co., Ltd.
The Central Provinces Railway Co., Ltd.
The Guzerat Railways Co., Ltd.
The Mandra Bhon Railway Co., Ltd.
The Sialkot Narowal Railway Co., Ltd.

Managing Agents, The Howrah-Amta Light Railway Co., Ltd.
The Howrah-Sheakhala Light Railway Co., Ltd.
The Barasat-Basirhat Light Railway Co., Ltd.
The Bukhtiarpur-Bihar Light Railway Co., Ltd.
The Futwah-Islampur Light Railway Co., Ltd.
The Arrah Sasaram Light Railway Co., Ltd.
The Shahdara (Delhi)-Saharanpur Light Railway Co., Ltd.

Managing Agents, The Burdwan-Katwa Railway Co., Ltd.
The Ahmedpur-Katwa Railway Co., Ltd.
The Bankura-Damoodar River Railway Co., Ltd.
The Kalighat-Falta Railway Co., Ltd.
The Katakal Talabazar Railway Co., Ltd.

Managing Agents, The Jhenidah Railway Syndicate, Ltd.
Agents, The Dhond Baramati Railway Co., Ltd.
The Pachora Jamner Railway Co., Ltd.

Managing Agents, The Dehri-Rohtas Light Railway Co., Ltd.
For the East India Distilleries and Sugar Factories, Ltd., K. P. M. Light Railway.

PARRY & CO., LTD.,
Managing Agents.

——	1		2		3		4		5	
	Passengers.		Passengers.		Passengers.		Passengers.		Passengers.	
	No.	Earnings.	No.	Earnings.	No.	Earnings.	No.	Earnings.	No.	Earnings.
		Rs.		Rs.		Rs.		Rs.		Rs.
1925	8,87,034	3,30,157	16,08,467	8,85,202	22,89,915	8,72,003	5,21,494	2,01,253	4,19,095	2,60,427
1926	9,29,288	3,29,779	14,50,788	7,63,998	24,51,784	8,96,231	5,10,496	1,96,379	4,70,292	2,94,912
1927	8,11,176	2,88,814	11,51,174	5,96,776	22,50,586	8,11,446	4,65,250	1,86,244	4,50,747	2,97,912
1928	7,24,207	2,47,460	9,78,573	5,07,756	20,67,447	8,20,423	4,81,540	1,94,287	4,07,531	2,65,325
1929	7,43,232	2,45,708	11,53,204	5,10,427	19,40,918	7,71,047	4,45,578	1,73,172	5,13,550	2,53,315
1930	7,03,868	2,28,589	11,33,680	4,89,981	19,16,138	6,91,685	5,51,840	1,62,853	6,76,387	2,48,766
1931	7,00,114	1,90,990	7,33,509	3,22,587	16,82,914	6,28,775	3,94,044	1,45,824	5,51,344	2,25,895
——	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Surplus Profits.	Total Gross Earnings.	Rebate.	Total Gross Earnings.	Rebate or Surplus Profits.
		Rs.		Rs.		Rs.		Rs.		Rs.
1925	6,30,404	7,646	17,45,598	2,35,864	10,84,589	1,97,064	2,64,063	* **6,193**	6,11,564	658
1926	6,17,711	* **68,340**	14,90,668	1,63,470	10,58,216	1,88,615	2,54,207	* **12,175**	6,25,284	2,832
1927	5,54,238	* **1,14,748**	12,87,332	1,01,380	9,83,602	1,66,937	2,57,622	* **9,417**	6,37,161	4,350
1928	5,64,034	* **88,269**	12,54,412	91,963	9,76,645	1,65,817	2,49,698	* **13,608**	6,03,793	* **11,841**
1929	6,07,923	* **67,590**	13,65,861	1,36,416	9,07,287	1,55,635	2,25,592	* **20,982**	5,98,378	* **4,164**
1930	5,10,715	* **1,45,938**	15,09,041	1,75,088	8,06,857	1,26,444	2,21,357	* **26,506**	5,77,308	* **12,539**
1931	4,30,461	* **2,41,931**	12,32,389	98,962	7,79,402	1,18,643	1,90,726	* **42,863**	5,00,627	* **52,267**
For ½ year ended 30-9-31	..	..	2,29,538	* **1,11,600**	..	..	..	..	..	..

* Heavy figures indicate " Rebate ".

—	6		7		8		9	
	Passengers.		Passengers.		Passengers.		Passengers.	
	No.	Earnings.	No.	Earnings.	No.	Earnings.	No.	Earnings.
		Rs.		Rs.		Rs.		Rs.
1925	22,34,438	6,89,627	..	..	3,03,676	1,34,656	8,12,070	2,84,462
1926	21,85,430	6,92,240	1,84,819	97,499	2,74,804	1,16,392	7,25,165	2,27,261
1927	22,28,265	6,51,250	1,84,274	82,851	2,30,801	95,969	8,58,247	1,91,331
1928	17,93,156	5,50,541	1,78,455	71,152	1,66,678	69,416	8,85,988	2,21,059
1929	16,68,959	5,32,335	1,66,591	62,651	1,14,799	42,449	9,14,758	2,27,706
1930	17,40,173	5,16,217	1,57,157	59,090	1,31,782	46,859	8,91,224	1,97,642
1931	12,78,264	4,02,292	1,46,989	31,949	90,898	34,480	8,61,953	1,73,783
—	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.
		Rs.		Rs.		Rs.		Rs.
1925	8,32,097	44,572	..	..	2,02,680	13,529	3,55,673	16,017
1926	8,26,634	39,971	1,50,344	32,924	1,60,592	* **2,854**	2,86,402	* **39,498**
1927	8,15,916	36,737	1,42,408	28,898	1,41,239	* **16,391**	2,42,696	* **81,851**
1928	6,69,851	* **9,743**	1,22,576	8,255	1,16,815	* **30,525**	2,88,490	* **44,405**
1929	6,49,944	* **5,111**	1,12,411	149	1,02,371	* **35,866**	3,13,758	* **9,974**
1930	6,36,705	* **16,694**	1,07,997	* **12,431**	1,06,907	* **33,974**	2,86,248	* **59,832**
1931	5,42,341	* **48,439**	73,794	* **20,984**	80,731	* **48,203**	2,46,721	* **93,499**
For ½ year ended 30-9-31	..	..	..	..	..	..	..	..

* Heavy figures indicate " Rebate ".

APPENDIX 3.—ANALYSIS OF COST OF RUNNING A 30-CWT. MOFUSSIL TYPE LORRY OR BUS.

As furnished by the Bombay Branch of the Indian Roads and Transport Development Association.

	Toll tax in existence.		No toll tax.	
	Passenger.	Goods.	Passenger.	Goods.
Annual Standing Charges.	Rs.	Rs.	Rs.	Rs.
License Fees	32	32	32	32
Tolls	764	2,204	120	120
Insurance	300	250	300	250
Depreciation for Bus' life 3 years	1,200	1,200	1,200	1,200
Wages: Driver and Cleaner	960	960	960	960
Establishment Charges	360	360	360	360
Garage Rent	120	120	120	120
Interest on Capital at 6 per cent.	216	216	216	216
Total	3,952	5,342	3,308	3,258
Assuming 20,000 *Miles per year, Running Cost.*				
Petrol consumption at 15 M. P. G. 1,335 gallons at Rs. 1-9-6.	2,128	2,128	2,128	2,128
Oil and Grease	100	100	100	100
Tyres (2 sets pass: and 2½ goods)	1,000	1,250	1,000	1,250
Repair charges	200	200	200	200
Spare Parts	150	150	150	150
Total Running Cost *plus* Standing Charges.	7,530	9,170	6,886	7,086
Divided by 20,000 miles annas operated per annum, cost per mile.	6·02	7·34	5·51	5·67

APPENDIX 4.

Number of commercial motor vehicles in Bombay Presidency and rates of fare usually charged.

——	No. of Commercial Motor Vehicles.	Rate of fare.
		Rs. A. P.
Northern Circle.		
Thana District	231	....
Part of Kolaba District in Thana Division.	195	....
Broach and Surat District in Thana Division.	74	....
Surat District	118	0-2-0 to 0-1-0
Broach District	32	0-2-0 to 0-1-0
Kaira District	243	0-1-0
Panch Mahals District . . .	96	0-1-0
Ahmedabad District . . .	306	0-0-9
TOTAL .	1,295	

NOTE.—The rate is usually varying due to keen competition. In Surat and Broach Districts it sometimes comes to 0-0-3 per head per mile.

Southern Circle.		
Belgaum District	536	0-0-3 to 0-0-6
Bijapur District	153	0-0-6 to 0-0-9
Dharwar District	350	0-1-6 to 0-2-0
Kanara District	133	0-1-6 to 0-2-0
Ratnagiri District . . .	210	0-0-6 to 0-0-9
Kolaba District	87	0-1-6 to 0-2-0
TOTAL .	1,469	

APPENDIX 4—*contd.*

——	No. of Commercial Motor Vehicles.	Rate of fare.
Central Circle.		Rs. A. P.
Poona District	835	*0-8-0 per mile for taxi and 0-0-9 for buses.
Satara District	No commercial vehicles.	0-0-3 to 0-0-4
Sholapur District	205*	0 0-6 to 0-0-8†
Nasik District	460	0-0-6 to 0-0-9
East Khandesh District . .	Information awaited from the Collector.	....
West Khandesh District . .	300‡	0-0-6 to 0-0-9
TOTAL .	1.800	
GRAND TOTAL .	4,564	

* Rates usually charged are much less on account of competition sometimes so low as 6 annas for a bus seat for 25 miles, *i.e.*, less than 3 pies per seat per mile.

† A schedule of rates is printed but not followed due to competition nor enforced.

‡ Few ply for goods.

I. D. and R. Circle, Nira L. B. Circle Division . . No motor vehicles carrying goods are running on the roads in charge of this Division.

D I. Circle . . . Information not available.

APPENDIX 5.

Summary of expenditure, as far as estimated, proposed in Bombay Presidency Public Works Department priority list of Communications Works.

	Estimated expenditure to 31st March 1933 from road development account.	Estimated cost of Works list A. Northern, Central and Southern Divisions.	Estimated cost of Works list B. Northern, Central and Southern Divisions.	Estimated cost of Works list C. Central and Southern Divisions.
	1	2	3	4
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
1. Bombay-Ahmedabad-Rajputana.	7·59	14·94	63·15	..
2. Bombay-Agra . .	3·56	7·69	5·87	1·80
3. Bombay-Poona-Bangalore	2·88	20·29 (3)	3·75	3·11
4. Surat-Dhulia-Bhusaval-Edlabad-Nagpur.	0·79	7·00	1·03	.. (2)
5. Bombay-Konkan-Goa .	6·05	25·44 (1)	11·12	4·50
6. Karwar-Bellary . .	1·02	1·72	..	0·42
7. Poona-Sholapur-Bijapur-Hubli.	1·00	4·21 (3)	20·45	0·35
8. Bandra-Ghodbunder-Thana.	0·61	0·73	7·36	..
9. Kumta-Sirsi-Hubli . .	0·36	2·41	..	5·00
10. Ratnagiri-Kholapur-Miraj-Bijapur-Hippargi-Sindgi.	0·25	0·44	8·34	0·82
11. Chiplun-Karad-Jath-Bijapur-Sindgi-Raichur.	..	6·74 (2)	..	1·06 (3)
12. Bombay-Poona-Sholapur-Hyderabad.	..	10·28 (1)	0·37 (2)	..
13. Bombay-Poona-Ahmadnagar-Aurangabad.	..	0·10 (1)	0·73 (1)	.. (12)
14. Surat-Chikhli-Bansda-Nasik-Poona.	..	1·96	0·10	5·37
(No road apparently exists, nor is the construction of any road proposed in any programme between Bansda and Barhe which is about 30 miles through Ghat country.)				
15. Indapur-Baramati-Nira .	..	0·81 (1)	1·10 (3)	1·50
16. Ahmednagar-Manmad-Malegaon.	..	0·66 (2)	0·29	0·21
17. Dhulia-Chalisgaon-Aurangabad.	..	.. (2)	..	.. (1)
18. Mahad-Bhor-Phaltan-Malsiras-Pandharpur.	..	1·99	6·11	..
19. Dhulia-Sakri-Pimpalner-Navapur.	..	.. (1)	0·19	0·14
20. Pimpalner-Satana-Chandor-Vinchur.	..	2·30 (1)	..	..
21. Bhusaval-Yawal . .	..	.. (2)	..	.. (1)
22. Malegaon-Chalisgaon-Pachora-Jamner-Edlabad.	..	.. (3)	.. (7)	..

APPENDIX 5—*contd.*

Summary of expenditure, as far as estimated, proposed in Bombay Presidency Public Works Department priority list of Communications Works—contd.

—	Estimated expenditure to 31st March 1933 from road development account.	Estimated cost of Works list A. Northern, Central and Southern Divisions.	Estimated cost of Works list B. Northern, Central and Southern Divisions.	Estimated cost of Works list C. Central and Southern Divisions.
	1	2	3	4
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
23. Songir-Dondaicha-Nandurbar-Taloda.	..	.. (2)	..	0·22
24. Burhanpur-Raver-Yawal-Chopda-Shirpur-Shahada-Prakasha-Taloda-Raisingpur.	..	8·02(23)	..	0·52
25. Satara-Rahimatpur-Pusesavli-Tasgaon.	..	.. (1)	..	..
26. Sholapur-Barsi . .	..	0·62 (1)	..	..
27. Sholapur-Osmanabad-Yedshi-Chausala.	..	1·10	0·15	..
28. Poladpur-Mahabeshwar-Surul.	..	.. (1)	..	2·00
29. Nasik-Trimbak . .	..	.. (1)	..	..
30. Nasik-Deolali . . .	..	.. (1)	..	..
31. Satara-Pandharpur-Mohol-Sholapur.	..	.. (1)	..	4·53 (6)
32. Nasik-Pimpalgaon-Vinchur-Yeola-Aurangabad.	..	.. (2)	..	..
33. Gotur-Tasgaon . .	..	8·00	..	1·60
34. Athani-Gokak . .	..	0·93	..	0·38
35. Vengorla-Belgaum-Bagalkot-Bellary.	..	.. (2)	13·30	0·39 (1)
36. Belgaum-Khanpur-Haliyal-Yeliapur-Sirsi-Kodkani.	..	0·58	3·38	2·70 (1)
37. Ahmedabad-Kaira-Godhra-Indore.	..	..	6·73 (1)	..
38. Dahanu-Vihigaon (Igatpur.	..	..	2·91	..
39. Ahmedabad-Gogho (Bhaunagar).	..	..	4·47	..
40. Ranpura-Dandhuka-Dholera (Khatiawar)	..	..	0·29	..
41. Deolali-Belapur Station .	..	..	2·91	..
42. Hadapsar-Saswad-Nira Bridge-Lonand-Waduth-Satara.	..	..	.. (1)	1·29 (3)
43. Indapur-Akluj-Sangola .	..	..	4·93	4·00
44. Junner-Mhaswad-Chopda	..	..	.. (1)	..
45. Malharpeth-Umbraj-Mayni-Mohod-Pandharpur.	..	..	.. (1)	2·56 (1)

APPENDIX 5--*contd.*

Summary of expenditure, as far as estimated, proposed in Bombay Presidency Public Works Department priority list of Communications Works—contd.

——	Estimated expenditure to 31st March 1933 from road development account. 1	Estimated cost of Works list A. Northern, Central and Southern Divisions. 2	Estimated cost of Works list B. Northern, Central and Southern Divisions. 3	Estimated cost of Works list C. Central and Southern Divisions. 4
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
46. Miraj-Pandharpur-Kurduwadi-Barsi-Latur.	..	..	.. (2)	7·71
47. Nasik-Dindori-Kalwan-Deola.	..	..	.. (1)	.. (2)
48. Malegaon-Nandgaon-Aurangabad.	..	..	.. (1)	.. (1)
49. Ahmednagar-Karmala-Tembhurni-Sholapur.	..	..	.. (2)	..
50. Satara-Tasgaon-Miraj-Kagwad-Chikodi-Gotur.	..	..	.. (2)	..
51. Malvan-Phonda . .	..	..	3·06	..
52. Harnai-Khed . . .	..	..	0·38	..
53. Dharwar-Saundatti-Yergatti-Gokak-Sankeshwar.	..	..	0·53	11·42
54. Kamatgi-Gadag . .	..	..	0·39	1·32
55. Havnur-Ekambi . .	..	..	0·99	0·97
56. Mirjan-Madras Frontier .	..	..	0·40	5·52
57. Karwar to Goa Frontier .	..	..	0·17	..
58. Ahmednagar-Dhond-Patas	..	..	..	0·21
59. Dondaicha-Shahada-Khetia.	..	..	..	.. (2)
60 Ghoda-Junnar-Otur-Brahmanwada-Kotul-Jamgaon.	..	..	..	1·02 (2)
61. Ghoti-Rajur-Sangamner-Belapur-Newasa-Shevgaon-Paithan.	..	..	..	0·38 (1)
62. Jalgaon-Ajantha . .	..	..	..	0·37
63. Karad-Tasgaon . .	..	..	..	1·72 (1)
64. Nandurbar-Chinchpada-Navapur.	..	..	..	.. (1)
65. Phaltan-Sangvi-Baramati-Dixal-Rashim-Karjat-Chincholi.	..	..	..	3·00
66. Raisingpur-Raigad-Nandurbar.	..	..	..	3·47
67. Sarola-Supa-Pimpalgaon-Dipa.	..	..	..	0·75
68. Wai-Wathar . . .	..	..	..	0·35
69. Devgad-Kaladgi . .	..	..	..	8·51
70. Bijapur-Bagewadi . .	..	..	..	7·33

APPENDIX 5—*concl'd.*

Summary of expenditure, as far as estimated, proposed in Bombay Presidency Public Works Department priority list of Communications Works—concld.

——	Estimated expenditure to 31st March 1933 from road development account.	Estimated cost of Works list A. Northern, Central and Southern Divisions.	Estimated cost of Works list B. Northern, Central and Southern Divisions.	Estimated cost of Works list C. Central and Southern Divisions.
	1	2	3	4
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
71. Bangalore-Gersappa	..	..	..	.. (1)
72. Sirsi-Shimoga	..	..	..	.. (2)
73. Gadag-Pala	..	..	..	0·40
74. Khanapur to Goa Frontier *vid* Sadashivgad-Kanara border.	..	..	..	6·00 (3)
75. Malwan-Kasal	..	..	..	0·10
76. Kolhar-Talikot	..	..	..	4·67
77. Haldipur-Navilgaon	..	..	..	0·10
78. Sanikatta-Hebul	..	..	..	2·00
79. Indi-Shirdhon	..	..	..	1·49
80. Balekhan-Tadri	..	..	..	0·15
81. Dharwar to Goa Frontier	..	..	..	0·09 (1)
82. Honavar-Gersappa	..	..	..	6·00
83. Gersappa-Manki	..	..	..	5·00
84. Dhulia	..	0·80	..	..
85. Sholapur	..	.. (1)	..	..
86. Ahmednagar	..	1·06	..	..
87. Barsi	..	.. (1)	..	..
88. Travellers' Bungalow at Ratnagiri.	..	..	0·14	..
TOTAL	24·11	130·82	175·09	124·52
			430·43	

( ) Bracketed figures indicate number of works of which the estimated cost is not given.

APPENDIX 6—(HUBLI DISTRICT).

Summary of Roads required to open up areas and act as feeders to Railway, and Roads required to connect Railway stations with existing Road Systems.

Station.	Roads required to open up area—Name of Point to which Road required.		Road required from station to link up with existing Road system.
Kusugal	Hantoor	2½ miles	....
	Bandwad	2 ,,	
	Shirguppi	3 ,,	
	Kusugal	1½ ,,	
	Halial	3 ,,	
Dundur	Ingalahalli	12 ,,	....
	Manakwad	3 ,,	
	Sisinahalli	3 ,,	
	Bennur	3 ,,	
Halkoti	Halkoti	1½ ,,	....
	Chik Handigol	1½ ,,	
	Hire Handigol	1½ ,,	
	Belahoda	3½ ,,	
	Shagoti	2½ ,,	
	Dundur	1 mile	
Hombal	Hulgol	6 miles	....
	Hombal	2 ,,	
	Venkatapur	3 ,,	
Balaganur	Kadadi	1½ ,,	....
	Balaganur	½ mile	
	Cavarwadi	2 miles	
	Lingdal	2½ ,,	
Mallapur	Hadagalli	4 ,,	...
	Kowjgeri	3 ,,	
	Honnapur	4 ,,	
	Mannoor	5 ,,	
	Chavadi	3 ,,	
	Aranushi	5 ,,	
	Hallur	5 ,,	
Alur	Hirial	15 ,,	....
	Jalial	7 ,,	
	Basarkod	6 ,,	
	Beleri	5 ,,	
	Holi Alur	¾ mile	
Katgeri	Kalavadi	1¾ miles	....
	Timmsagar	2 ,,	
	Tagunshi	4 ,,	
	Hansnoor	6½ ,,	
	Sulikeri	4½ ,,	
	Katgeri	4 ,,	
Bagalkot	Kirsur	3 ,,	..
	Benakatti	7 ,,	
	Herkal	6 ,,	
	Mugalahalli	4 ,,	

APPENDIX 6—(HUBLI DISTRICT)—*contd.*

Summary of Roads required to open up areas and act as feeders to Railway, and Roads required to connect Railway stations with existing Road Systems—contd.

Station.	Roads required to open up area—Name of Point to which Road required.		Road required from station to link up with existing Road system.
Kanginhal	Naraygallu	4 miles	....
	Lakkondi	5 ,,	
Harlapur	Mundrigi	15 ,,	....
	Naragal	12 ,,	
	Mukkanur	11 ,,	
Bannikoppa	Bannikoppa	1 mile	....
	Mallikoppa	2 miles	
	Mannapur	1½ ,,	
	Itgi	4 ,,	
Bhanapur	Balgiri	15 ,,	....
	Mangalore	12 ,,	
	Talapal	1½ ,,	
	Biramal	10 ,,	
	Ballageri	15 ,,	
	Allugundi	10 ,,	
Badami	Pattadkal	8 ,,	....
	Ivahalli	10 ,,	
	Nandikeshwar	6 ,,	
	Hullikeri	6 ,,	
	Mushtagiri	7 ,,	
	Adgall	1 mile	
Karlimatt	Achnur	4½ miles	....
	Shirguppi	5 ,,	
	Bennur	4 ,,	
Sitimani	Alur	1 mile	....
	Hire Gulbal	4½ miles	
Alimati	Hebbal	6 ,,	....
	Vandal	5 ,,	
	Benal	2 ,,	
	Gani	8 ,,	
Telgi	Talevad	5½ ,,	....
	Kudgi	3 ,,	
	Golsangi	5 ,,	
	Uppaldinni	10 ,,	
	Biraldinni	6 ,,	
	Masuti	5 ,,	
Mulvad	Mangoli	5 ,,	....
	Kakhandik	10 ,,	
	Mulvad	22 ,,	
Jumnal	Sarvad	5 ,,	....
	Tonshial	7 ,,	

APPENDIX 6 (HUBLI DISTRICT)—*contd.*

Summary of Roads required to open up areas and act as feeders to Railway, and Roads required to connect Railway stations with existing Road Systems—contd.

Station.	Roads required to open up area—Name of Point to which Road required.	Road required from station to link up with existing Road system.
Minchnal	Atharga 2½ miles	....
	Nagthan 3½ ,,	
	Gunki 2 ,,	
	Tidgundi 5 ,,	
	Kannoor 10 ,,	
Nimbal	Inchgeri 13 ,,	....
Indi Road	Hirebevnur 5 ,,	....
	Chikbevnur 2 ,,	
	Bhatgonki 5 ,,	
Lachyan	Agarkhud 8 ,,	....
	Mannar 12 ,,	
	Padnur 4 ,,	
Tadval	Jevur 8 ,,	....
	Karajgi 5 ,,	
	Mangrol 2 ,,	
	Ankalgi 4 ,,	
	Javalgi 5 ,,	
Tikkerawadi	Nagewadi 1 mile	Connection with Trunk Road required.
	Tikkerawadi ½ ,,	
	Kumta ½ ,,	
Chalgeri	A road from the Railway station 8 miles to Hitiabidari will connect five villages. A road from the railway station 5 miles to Mudayanur will connect nine villages.	....
Ranibennur	A road 10 miles to Bisalahalli will connect 14 villages. A road to Medleri (8 miles) will connect seven villages.	....
Byadgi	A road 7 miles to Kodehalli will connect four villages. Balkeri 6 miles Bannehatti.	....
Karajgi	A road to Nagalur (15 miles) will connect 29 villages.	....
Saunshi	A road 10 miles to Inkiligi will connect 7 villages. A road 8 miles to Yethanahalli will connect 4 villages. A road 5 miles to Barwad will connect with the station this village and Hosahalli.	....
Amaigol	....	Connection with Poona-Bangalore Road required.

APPENDIX 6.—(HUBLI DISTRICT)—*concld.*

***Summary of Roads required to open up areas and act as feeders to Railway, and Roads required to connect Railway stations with existing Road Systems*—concld.**

Station.	Roads required to open up area—Name of Point to which Road required.	Road required from station to link up with existing Road system.
Kyarkop . . .	Kyarkop 1½ miles and 5 other villages.	Connection with Dharwar-Castle Rock Main Road required.
Mugad . . .	A road to Devarhubli (6 miles) will connect four villages.	Connection with Dharwar-Belgaum Main Road required.
Alnavar . . .	A road 7 miles to Arawatigi will connect 8 villages.	Ditto.
Desur . . .	Nandahalli 5 miles. . .	....
Bhilavadi . . .	Ashta 6 miles . . .	....
Shenoli . . .	A road 10 miles to Wangi will connect 20 villages.	....
Targaon . . .	Arvi . . . 6 miles Sasapada . . 8 „	....
Wathar . . .	Vaikali . . . 7 „ Dadada.	....
Rajewadi . . .	Shindoni . . 4 miles	....
Guroli . . .	Guroli Ghat . . 2 „	....
Alandi . . .	Tharad . . . 5 „	Connection with Poona-Bangalore Road required.
Bhursangi . .	Wadaki . . 1½ „	....
Sasvad Road . .	Kunduwad or Budaval. 5 „	....
	TOTAL . 672 miles	

2(*b*). SIND.

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SIND.

CHAPTER I.—INTRODUCTORY.

1. *Brief itinerary.*—(*a*) We proceeded from Lahore to Rohri on October 13th and, on the morning of the following day, went by road to Shikarpur to Garhi-Yasin and back to Sukkur *via* the Canal Bank Road. In the afternoon we attended a meeting convened by the Collector of Sukkur as detailed in paragraph 3. On the morning of October 15th we proceeded to Mehrabpur *via* the Canal Road and took the train to Nawabshah, where the Collector had arranged a meeting for us during the afternoon. On October 16th we left Nawabshah for Sakrand by road and then travelled over the recently opened Sind Left Bank Feeder Railway from Sakrand to Tando Adam where we joined the train for Hyderabad (Sind). In the afternoon of this day a meeting was convened for us by the Collector of Hyderabad, and on the 17th morning we proceeded to Karachi where we remained for two days.

(*b*) During our tour of Sind we travelled 434 miles by rail, and 100 miles by road.

2. *Meetings and Interviews.*—(*a*) *District Officials.*—(i) On the afternoon of October 14th the Collector of Sukkur, Khan Bahadur Sheikh Yakub, convened a meeting for us at which the following gentlemen were present :—

Khan Bahadur Kaisar Khan Bosdar.	Vice President, District Local Board, Sukkur.
Rai Bahadur Chandi Ram Verhomal.	President, Rohri Taluk Local Board.
Khan Sahib Arnis Baksh Khan	President, Sukkur Taluk Board.
Mr. Akhtar	Engineer and Officer in charge of the District Local Board.
,, Kirkpatrick . . . } ,, Austen . . . . }	Public Works Department.

(ii) On October 15th, the Collector of Nawabshah, Sahibzada Sardar Muhammad Khan, convenced a meeting for us at which the following gentlemen were present :—

1. Sayed Ghulam Mustafa Shah	Executive Engineer, Rohri Canal Division, No. III.
2. Khan Sahib Mirza Farukhbeg, Bar-at-Law.	President, District Local Board, Nawabshah.
3. Khan Sahib Gul Mohammad Khero.	President, Taluka Local Board, Moro.

4. Wadero Mahomed Ashraf	Vice President, Taluka Local Board, Naushahro.
5. Sayed Budhal Shah	President, Taluka Local Board, Nawabshah.
6. Wadero Dost Muhammad	President, Taluka Local Board, Kandiaro.

(iii) On October 16th, the Collector of Hyderabad, Mr. J. A. Madan, convened a meeting for us at which the following gentlemen were present :—

1. Mr. N. Menesse	Executive Engineer.
2. ,, Chetanram T. Lala	Deputy Collector.
3. ,, Miran Mahmad Shah	President, District Local Board, Hyderabad.
4. ,, S. A. Maybury Lewis	Executive Engineer, Rohri Division, IV.
5. ,, Mahmad Ibrahim	Mukhtiarkar, Hala.
6. ,, Allah Bachayo Hyder Khan.	Representative, Taluka Local Board, Badin.
7. ,, Sayed Shah Nawaz Shah.	Representative, Taluka Local Board, Guni.

(*b*) *Karachi.*—(i) At Karachi we were invited to attend a meeting of the Sind Road Sub-Committee held at Government House, Karachi, on October 17th. The subject of our tour and the co-ordination of road development with Railways had been included among the agenda for this meeting, at which the Commissioner of Sind took the Chair. Among others present at the meeting were Sir Charlton Harrison and Mr. Mould, Joint Chief Engineers, Public Works Department, Sind, and Mr. Bigg-Wither representing the Karachi Chamber of Commerce and the local Branch of the Indian Road and Transport Development Association.

(ii) We arranged a meeting with Mr. Hawkes, Divisional Superintendent of the Karachi Division of the North Western Railway. At this meeting there were also present Mr. A. A. Phillips, Divisional Commercial Officer and Mr. Proudlock, Divisional Transportation Officer of the Karachi Division. As the North Western Railway operates certain light railways on behalf of the Managing Agents, Messrs. Forbes Forbes and Campbell, we invited Mr. Raschen, representative of Messrs. Forbes Forbes and Campbell to be present at the meeting.

(iii) We did not arrange a separate meeting with the representatives of the Chamber of Commerce at Karachi as Mr. Bigg-Wither of the Chamber was present at the meeting held at the Government House and stated that the views, exchanged at that meeting in regard to the enquiry on which we are engaged, would be communicated by him to his Chamber.

(iv) We invited the representatives of the Karachi Indian Merchants Association to meet us, and they were represented by Lala Ruphao,

Vice President, Shree Kishan Lala, M.A., Chairman of the Railway and Road Committee of the Association and Mr. Tara Chand, Secretary of the Association.

3. We are indebted to the Collectors of the districts mentioned for collecting for us information relating to these districts: and to Sir Charlton Harrison and Mr. Mould, Joint Chief Engineers, Public Works Department, for statistics in regard to roads in Sind generally. We take this opportunity of recording our thanks to these gentlemen for the ready help they have given us in this connection.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

4. *General.*—The area of Sind is about 46,500 square miles and the population in 1931 was 3,887,070. There are about 1,170 miles of railways, 820 miles broad gauge (North Western Railway), 130 miles narrow gauge (Sind light railways worked by the North Western Railway) and 220 miles of metre gauge (Jodhpur-Hyderabad, etc.). There are about 100 miles of metalled roads and 12,500 miles of unmetalled roads, largely used by saddle and pack traffic, wheeled traffic being uncommon and the unmetalled roads generally in a neglected condition. At present the milage of motorable road parallel with and competing with railways is negligible and the opportunity for planning a co-ordinated road and railway system rather than a competitive one, when money is available, is unique ; and we will refer to this in discussing the road programme.

5. *Adequate land to be secured now.* –There is, however, one general aspect of the present position in its relation to the future, to which we would refer here. Under the most favourable conditions it is obvious that Sind cannot for many years look to any great development of expensive types of road, and the improved earth road must be relied on. With sparse rainfall and the probable development of the use of bullock carts, as colonisation proceeds, the wear and tear on narrow earth roads will be considerable and a generous width will be necessary. To the extent to which existing roads have been used principally as pack and bridle tracks with only an occasional vehicle, narrow widths have probably sufficed and the land width has possibly been encroached upon and is probably inadequate to the needs of the future. With returning prosperity and with colonisation the value of land will appreciate and it seems that early steps should be taken to demarcate the land widths of all existing rights of way, to remove encroachments that can be proved, and to acquire the necessary additional land widths now. If this is not done now and the roads are generally too narrow, the trouble in future will be immense.

6. *Recent expenditure on roads.*—Recent expenditure on extra-municipal roads may be taken as—

——	Construction.	Maintenance.	Total.
	Rs.	Rs.	Rs.
Provincial	..	1,80,000	1,80,000
Local	..	4,63,000	4,63,000
TOTAL .	..	6,43,000	6,43,000

This is equivalent to an expenditure of Rs. 14 per square mile of area and As. 2·6 per head of population. In the Punjab in 1929-30 the expenditure was about Rs. 100 per square mile of area and As. 6·75

per head of population. The Punjab has a long start but it is clear that for the minimum of development Sind will have to spend much more on roads.

7. *Communications in relation to area and population.*—We have in all Provinces endeavoured to present a comparable picture by comparing the present extent of communications in districts having a density of population of 100 per square mile and over, as areas with less than that density include mountain, forest and desert land the requirements of which vary greatly. In Appendix I will be found particulars for Sind on the basis of the districts having a density of 100 and over (*i.e.*, excluding Karachi and Thar Parkar districts and ignoring the recent creation of the Dadu district from portions of Larkana and Karachi). From this it will be seen that the mean density of population is only 118 per square mile in those districts of above 100 density; that there are 27 square miles of area for every mile of railway and only 2·56 square miles for every mile of " road "—at present right of way only. Railways in this area, and particularly within the Sukkur left bank commanded area, appear to be adequate, and of the whole of the 100 density area only 32 per cent. is more than 10 miles from a railway. If all " roads " were in reasonably passable condition then the mean condition would be that, assuming a uniform distribution of these, no one would be more than about $1\frac{1}{4}$ miles from a public road—a reasonably good position in a flat dry country. But the value of these figures is comparative rather than absolute, and in our general report we summarise them for all Provinces.

CHAPTER III.—RAILWAYS AND MOTOR TRANSPORT IN SIND.

Railways serving Sind.

8. As already stated there are altogether 1,170 miles of railway in Sind. The principal lines belong to the North Western Railway, the main line of which, between Lahore and Karachi, runs through the province on the left bank of Indus from Rohri to Karachi and Kiamari. This line is double throughout except between Hyderabad and Kotri where it crosses the Indus. At Rohri the branch to Quetta takes off, serving Sukkur, Ruk, Shikarpur and Jacobabad. At Ruk, the branch serving the right bank of the Indus turns in a southerly direction meeting the main line at Kotri.

The North Western Railway has recently opened a short system of branch lines on the 5'-6" gauge known as the Sind Left Bank Feeder Lines. The principal section of these lines runs from Mehrabpur to Tando Adam, parallel to a great extent with the main line, and at average distance of about 15 miles from it. At two points the branch throws out short cross connections which meet the main line at Pad Idam and Nawabshah.

In addition to its own broad gauge system, the North Western Railway operates, on behalf of Messrs. Forbes Forbes and Campbell of Karachi, two small branch lines known as the Sind Light Railways. These are of 2' 6" gauge and run between Larkana and Dodapur (54 miles), and Jacobabad and Kashmor (77 miles).

Running eastwards for a distance of 124 miles from Hyderabad to the frontier of the Jodhpur State, is the British section of the Jodhpur-Hyderabad Railway. This is operated by the Jodhpur Railway on behalf of the Secretary of State. An integral part of the same system is the branch from Jamrao to Jhudo (50 miles). The Jodhpur Railway also operates the Mirpurkhas-Khadro branch which is one of the Sind Light Railways, of which the Managing Agents are Messrs. Forbes Forbes and Campbell.

9. *Metalled roads parallel with railways.*—Road development in Sind has not proceeded very far, and in consequence there is at present a comparatively small mileage of metalled road running parallel or within 10 miles of the railway. The actual mileage is as follows :—

	Miles.
Karachi-Maler	13
Sukkur-Shikarpur	25

10. *Motor bus competition with the railways.*—In view of the paucity of good roads, motor bus competition with the railways in Sind has not

developed to any great extent. The North Western Railway only reports the following 5 services :—

	Distance by rail.	No. of trips made daily by buses.
(1) Karachi City-Drigh Road (Metalled)	9	180
(2) Karachi City-Maler (Metalled)	13	
(3) Sukkur-Khairpur Mirs (Unmetalled)	19	15
(4) Larkana-Kambar Ali Khan (6 miles only metalled)	15	42
(5) Rohri-Sukkur-Shikarpur (Metalled)	26	120

As regards the first two services, these are suburban to the city of Karachi. Formerly the railway endeavoured to meet the competition by running suburban trains at suitable timings ; but it was found that these trains were unremunerative, and they were therefore withdrawn. As a result of this bus fares were enhanced, but when the public wished, in consequence, to return to the railway, they found that the trains were cancelled.

The bus service from Larkana to Kambar runs in competition with one of the Sind Light Railways 2′ 6″ gauge lines and, as only three mixed trains a day are provided on this railway, and they take on an average very nearly an hour to perform the journey, we do not see how the light railway can hope to compete with the buses. The light railway, is moreover, further handicapped, because the fares charged over it are based on an adjusted mileage and for the 15 miles between Larkana and Kambar Ali Khan a fare representing 22 miles is actually levied.

11. *Effect of competition on the Sind Light Railways.*—In other provinces motor bus competition has generally been first felt by the light railways, and has, we think, hit them harder than standard gauge lines. Accordingly while we were in Karachi, we took the opportunity of discussing the subject with Mr. Raschen of Forbes Forbes and Campbell and Company. Mr. Raschen is Chairman of the Sind Light Railways.

The Sind Light Railways consist of three lines :—

(1) Jacobabad to Kashmor (77 miles).
(2) Larkana to Dodapur (54 miles).
(3) Mirpurkhas-Khadro (50 miles).

The first two are operated by the North Western Railway, the last by the Jodhpur Railway. The first two are guaranteed lines. The conditions of working the Mirpurkhas-Khadro line are still under consideration, but we understand from Mr. Raschen that at present it is not subsidized, but any loss on it is felt by Government as it is being worked by the Jodhpur Railway as part of the British section of the Jodhpur-Hyderabad Railway. Mr. Raschen gave us the latest reports of all three railways, and we give below particulars of the number of passengers and earnings therefrom from the year 1927-28 to 1931-32.

These figures are also reproduced on graphs. The Directors of the Company state that the principal cause of the decrease is the severe motor bus competition experienced on these railways.

Larkana-Jacobabad (Sind) Light Railway.*

Year.	Passengers.	Earnings.
		Rs.
1926-27	4,21,166	1,77,962
1927-28	3,74,667	1,84,801
1928-29	3,30,907	1,73,857
1929-30	3,55,423	1,69,130
1930-31	2,96,501	1,54,531
1931-32	2,43,831	1,26,261
Jacobabad-Kashmor Feeder.		
1926-27	2,01,199	1,44,099
1927-28	1,90,967	1,48,122
1928-29	1,31,859	1,28,328
1929-30	1,53,262	1,26,828
1930-31	1,65,482	1,21,843
1931-32	1,19,992	97,142
Mirpurkhas-Khadro Feeder.		
1926-27	1,88,116	1,17,399
1927-28	1,53,587	98,140
1928-29	1,85,264	1,15,571
1929-30	1,20,707	76,044
1930-31	1,76,835	79,685
1931-32 (approx.)	97,813	66,473

The North Western Railway which operates the first two lines has only reported motor bus competition between Larkana and Kambar Ali Khan on the Larkana Dodapur Railway, but in official reports given us by the Directors of the Sind Light Railways, it is suggested that the competition extends a good deal further than this on unmetalled roads, and there can be little doubt that, were there any further development of roads parallel with these railways, a further drop in the earnings of the railways might be expected.

Mr Raschen informed us that, in common with the other Managing Agents of the Light Railways in India, his Company had recently made a joint representation to the Railway Board asking for remedial measures against the motor bus competition which is now being allowed to develop and which, in affecting the finances of the branch lines, is also affecting the Government finances.

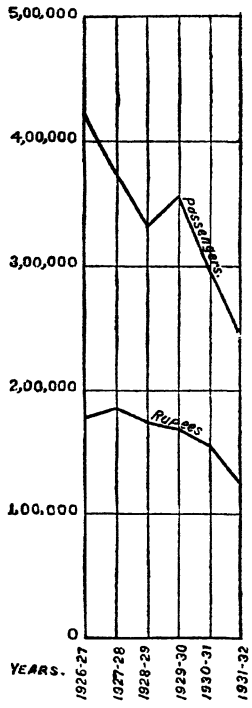
Like the other Light Railways† in India, it would appear that the Sind Light Railways have been seriously hit by motor bus competition

* This line is opened only as far as Dodapur.

† *See* reports on Bengal, Central Provinces and Bombay.

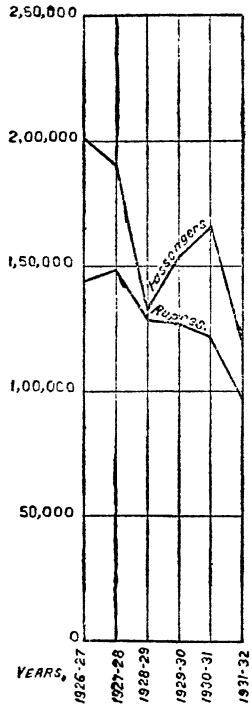
LARKANA-JACOBABAD (SIND) LT. RY.

TABLE SHOWING Nº OF PASSENGERS AND THE EARNINGS FROM THE YEAR 1926-27 TO 1931-32 INCLUSIVE.



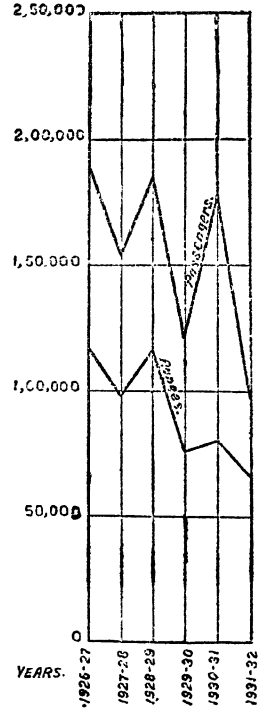
JACOBABAD-KASHMOR FEEDER

TABLE SHOWING Nº OF PASSENGERS AND THE EARNINGS FROM THE YEAR 1926-27 TO 1931-32 INCLUSIVE.



MIRPURKHAS-KHADRO FEEDER

TABLE SHOWING Nº OF PASSENGERS AND THE EARNINGS FROM THE YEAR 1926-27 TO 1931-32 INCLUSIVE.



To face page 8.

and, we think, cannot meet it effectively. The trains over these railways run at irregular intervals and are infrequent. They are all mixed trains and therefore their speed is slow. Moreover, the rail used is of light section and in many places the track is unballasted, and the usual speed restriction of 10 miles an hour is imposed on trains entering crossing stations.

Mr. Raschen informed us that his Company recognized that improvements to the railways were necessary, but with the shares of the railways at their present level, it was impossible to raise fresh capital for improvements.

We asked him whether his Company would be prepared to operate road motor services as the Managing Agents of the Bengal Light Railways wished to do, but he informed us that so far this has not been contemplated, but his Company would be prepared to consider any suitable plans for so doing. He asked whether, in the event of the Company being willing to contemplate the operation of buses, the working agencies, *i.e.*, the North Western and the Jodhpur Railways would be responsible for working the buses in the same way as they are now responsible for the running of the trains. We were, of course, unable to give a definite reply to this, but informed him that it would be reasonable for such an arrangement to be made.

As we shall deal with the operation of road motor transport by railways in the general part of our report, we offer no further comments on the suggestion here.

CHAPTER IV.—RAILWAY PROJECTS IN SIND.

12. The following railway projects have been contemplated in Sind :—

	Gauge.	Miles.
(1) Sind Right Bank Feeders . .	5′-6″	136
(2) Bombay Sind Connection . .	5′-6″	267
(3) Khadro-Nawabshah . . .	3′-$\frac{3}{8}$″	22

No. 1.—The North Western Railway reports that these lines have been surveyed, and the survey shows that they would probably prove remunerative. We consider, however that, when funds once more become available for railway construction, before any work is undertaken on these lines, a combined railway and road scheme of development in this area should be worked out. The proposed Sind-Punjab road between Hala and Mehrabpur on the left bank of the Indus would undoubtedly affect the earnings of the Sind Left Bank Feeder Railways and increase the heavy annual loss already being incurred on these railways.* A similar effect must follow if a railway and a road parallel with each other are constructed on the right bank, and we consider that, in view of the development of motor transport, it is worth investigating whether a road system would not better serve the area on the right bank than the proposed feeder railways, because as will be seen from the Map, which we reproduce, the area commanded by the Sukkur Barrage irrigation and uncommanded by the present railway, is small.

No. 2.—Bombay-Sind Connection.—This project will provide **an important Trunk Railway Route, the need of which has been felt** for many years and the question of substituting for it a road does not therefore arise.

No. 3.—Khadro-Nawabshah.—The extension of the Mirpurkhas metre gauge line from Khadro to Nawabshah (22½ miles) was discussed with Mr. Raschen, Chairman of the Sind Light Railways Company, and Mr. Baumgartner, Manager of the Jodhpur Railway, who both claimed that Nawabshah is the natural terminus of the branch line and that the extension would appreciably enhance the earnings of the branch. On the other hand at the meeting convened for us by the Collector of the Nawabshah District, we were informed in answer to our question that the metalling of the road between Nawabshah and Khadro was among the most urgent needs of the district, and it was stated that the road would be sufficient for the present and would probably adequately develop the area in future.

We think it is quite clear that, if the road between Nawabshah and Khadro is improved, the proposed extension of the railway has little

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* It should be noted that the local Government have guaranteed the North Western Railway against any loss of working arising from the operation of the Sind Left Bank Feeder Railways.

chance of carrying any passenger traffic. We understand that there is a proposal (related to the Bombay-Sind Connection) to convert a portion of the British section of the Jodhpur-Hyderabad Railway with the branches taking off therefrom to the 5'-6" gauge. There seems to be therefore more than one good reason against the extension of the metre gauge line from Khadro to Nawabshah in the near future.

CHAPTER V.—PROGRAMME OF ROAD DEVELOPMENT.

13. *Two Programmes.*—There are two separate programmes in Sind (*a*) for the development of provincial trunk roads, and (*b*) for development in connection with the Sukkur Barrage irrigation. The former comprises the development of the following trunk roads :—

(i) Karachi-Hyderabad ;

(ii) Hyderabad-Multan on the left bank of the Indus ;

(iii) Kotri-Sibi-Quetta on the right bank ; and

(iv) Hyderabad-Umarkot-Rajputana.

The present programme in respect of these consists generally of bridging and grading as earth roads, and comprises fifteen projects of which there are estimates in respect of seven only amounting to Rs. 22,26,989. In respect of these schemes we would venture the following suggestions :—

(*a*) *Karachi-Hyderabad Road.*—Although this traverses a somewhat sparsely populated country and cannot be of very great local benefit, there is a very strong demand in Karachi for an outlet by road connecting with the rest of India. The alignment is not immediately parallel with the railway being for a considerable distance at a little more than ten miles from it, but it connects two populous centres and would within such " zones ", if any, as may be prescribed, afford facilities for competition with the railway, to which extent it is urged on the railway side that the expenditure is at present unjustified. In so far as the decision to proceed with this scheme from the road development account may be taken before any general policy for the future is thrashed out as a result of the coming conference, we refrain from commenting further upon it. We would, however, draw attention to the opinion of the North Western Railway upon this scheme. The railway raises particular objection to it on the grounds that, passing as it does through comparatively barren country, it will act as a competitor for long distance traffic between Karachi and Hyderabad, and divert this traffic from a double line of railway on which a large capital outlay has been incurred. The railway urges that, at a time when money is tight, and large areas, without either road or rail are suffering from lack of development, expenditure on such a scheme cannot be regarded as justifiable.

(*b*) *Hyderabad-Multan Road.*—The alignment of this road in Sind which, it is suggested, will eventually make through communication with Multan and the Punjab road system, is in the main closely parallel with existing railways. When the alignment was first selected for development, part at least of it lay at some distance from the North Western Railway main line, at such a distance, in fact, that its use, in conjunction with cross roads, for competition with the railway would have involved considerable detours, which to some extent would have

prevented keen competition, while the trunk road would have acted as a "collector" linked with the railway by cross roads. The position has, however, been completely changed by the recent construction of the Sind left bank feeder railways, and the trunk road is now closely parallel for about 120 miles with these and throughout its whole length in Sind, about 260 miles, would now be closely parallel with the railway. We recommend, therefore, for very serious consideration the possibility of adopting a new alignment as the ultimate objective for this trunk road, so designed that its various sections act more as feeders to the railway than as direct competitors; and we would further suggest that, while such a trunk road might suitably be laid down on paper, its development should at first aim largely at the provision of local feeders, the ultimate completion and linking up being left for the future. We admit that there are arguments in favour of having a through route available for occasional emergencies, which cannot be judged in terms of more economic value, but we think that, in the existing stage of development, such occasional and administrative needs might well be met by the existing canal bank roads which, although not intended for, and quite unsuited to, continuous use, would still be available for occasional light traffic. Finally we would observe that from the northern border of Sind there would still remain 130 miles or so to be constructed before contact could be made with the Punjab road system, and that, until there is some prospect of this by a concerted action among the administrations concerned, the road must be regarded primarily as required for Sind alone, in which character we feel that development might be from the village to the market with ultimate through connection rather than the completion first of a trunk and then of the branches.

(c) *Kotri-Sibi-Quetta Road.*—Here again, in so far as this road may be regarded as part of a through trunk leading eventually to Quetta, we would observe that beyond the Sind border near Jacobabad there would be a length of 80 miles across unprofitable country before the Baluchistan road system could be reached at Sibi, and having regard to present circumstances we venture to doubt whether a road in Sind on the right bank of the Indus need be assigned more than provincial status. Viewed thus, we would observe that for a distance of 80 miles north of Kotri there is apparently no irrigation from the Sukkur Barrage and little justification for a local back-bone artery closely parallel with the railway. For the rest of the proposed alignment, up to Shikarpur, the road will pass through an irrigated area in which the greatest present need appears to be the provision of agricultural feeders. But we are clear that this part of this project, *i.e.*, within the irrigated area, cannot properly, and should not, be planned until it has been examined in conjunction with the Sind Right Bank Feeder Railway projects. If those railways, to which we refer in the preceding chapter, are deemed to be necessary to bring markets within easy reach of the area "uncommanded" by the present railway—*vide* map—then we are clear that there is unlikely to be enough local passenger traffic to render profitable two more or less parallel railways when competing with a motor

transport road, and the paramount need may be the provision of nearer markets. In that case the through road would have to be on a devious alignment composed of local feeders leaving the ultimate through connection to the justification of the distant future. If, however, the railway projects are abandoned, then the road might be aligned just outside the belt of country " commanded " by the present railway and be connected by cross roads with markets on it and be provided with branch roads to the west, thus serving the object of through, if devious, connection and acting as a valuable agricultural " collector ". But whatever the eventual development may be, roads and railways should be jointly planned.

(*d*) *Hyderabad-Umarkot-Rajputana Road.*—In this case in particular we would venture to suggest that the ultimate connection with Rajputana is at present and for the visible future most doubtful. And, regarding the road as back-bone of the local system, we venture to think that the whole alignment might be reconsidered and that the possibility of some other, not immediately parallel with the railway, and bringing facilities to country at present unserved, might be considered.

14. *Programme for development in connection with the Sukkur Barrage.*—This programme, which we reproduce at Appendix 2, consists of a scheme of the cheapest form of development averaging for Type A Rs. 1,000 per mile, Type B Rs. 4,500 per mile, and Type C Rs. 25,000 per mile. The programme contemplates 273 miles of Type A, 262 miles of Type B, and only 30 miles of Type C at a total cost of Rs. 22 lakhs for original outlay and Rs. 2½ lakhs for maintenance ; and this is a programme which should, we consider, be proceeded with as soon as possible. It represents only a modest beginning.

CHAPTER VI.—SUMMARY OF CONCLUSIONS.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

There are 820 miles of broad gauge railways, 130 miles of narrow gauge, and 220 miles of metre gauge, or a total of 1,170 miles of railways in Sind. There are only about 100 miles of metalled road. (Para. 4.)

(2) We think that timely steps should be taken to secure adequate land for future road development at the time of colonisation and before land values appreciate. (Para. 5.)

(3) On the basis of area the recent expenditure in Sind on roads is equal to only about one-seventh of that in the Punjab while on the basis of population it is about one-third. (Para. 6.)

(4) Two districts have a population density of less than 100 and in the remainder there are 27 square miles of area on the average dependent upon one mile of railway and only 2·56 square miles dependent on one mile of road so that if all roads were improved facilities will be brought within a measurable distance of all. In this area 32 per cent. of the total is more than ten miles from a railway. (Para. 7.)

CHAPTER III.—RAILWAYS AND MOTOR TRANSPORT IN SIND.

(5) Motor bus competition has not developed to any great extent except in respect of the Sind light railways. (Paras. 8 to 11.)

CHAPTER IV.—RAILWAY PROJECTS.

(6) There are three railway projects pending in Sind as follows:—

(i) Sind Right Bank Feeders, broad gauge 136 miles, in respect of which we consider that the alternative of development by road should be considered.

(ii) Bombay Sind Connection, broad gauge 267 miles. This is an important through connection and the question of an alternative road does not arise.

(iii) Khadro-Nawabshah, metre gauge 22 miles. We doubt the necessity of this project. (Para. 12.)

CHAPTER V.—PROGRAMME OF ROAD DEVELOPMENT.

(7) There are two separate programmes in Sind (*a*) for the development of provincial trunk roads and (*b*) for development in connection with the Sukkur Barrage irrigation. We venture to suggest that the former be reconsidered, but we consider that the latter should be proceeded with at once. (Paras. 13 and 14.)

APPENDIX 1.

Particulars regarding communications in the area having a density of population exceeding 100 per square mile, excluding Karachi and Thar Parkar Districts which have a density of less than 100 per square mile.

Area	21,670 square miles.
Population	2,767,808
Average density	118 per sq. mile.

——	Length in miles.	Length per 100 sq. miles of area.	Area per mile of road or railway. Sq. miles.	Persons per mile of road or railway.
1. Railways	800	3·68	27·0	3,450
2. Metalled roads	50	0·23	108·4	55,350
3. Improved or motorable unmetalled roads (fair weather).	..	..	..	..
4. Total motorable roads	50	0·23	108·4	55,350
5. Other unmetalled roads, say	8,400	..	..	..
6. Total all roads	8,450	39·00	2·56	327

The area more than 10 miles from any railway line is 7,023 square miles or 32·4 per cent. of the total.

APPENDIX 2.—ROADS REQUIRED FOR DEVELOPMENT OF SUKKUR IRRIGATED AREA.

Minutes of a meeting of the Sub-Committee appointed by the Sind Road Board's Sub-Committee held on the 15th, 16th and 17th May 1931.

The original Sub-Committee consisted of the Superintending Engineer, Indus Right Bank Circle, the Superintending Engineer, Indus Left Bank Circle, the Superintending Engineer, Rohri Canals Circle, and the Superintending Engineer, Western Circle. The following were present:—

The Superintending Engineer, Indus Right Bank Circle.

The Superintending Engineer, Indus Left Bank Circle.

The Superintending Engineer, Rohri Canals Circle.

The Chief Engineer in Sind (late Superintending Engineer, Indus Right Bank Circle) and the Superintending Engineer, Eastern Nara Circle, were co-opted members of the Sub-Committee.

The Notes were read from Mr. B. B. Maclachlan, late Superintending Engineer, Western Circle, Mr. C. O. Lowsley, late Superintending Engineer, Indus Right Bank Circle, and Divisional Officers of the Eastern Nara Circle. The general opinion of the meeting was that roads outside interprovincial roads which would be constructed and improved from petrol tax funds should be treated under the following heads:—

(A) Roads passing through kalar and clay soil to be graded.

(B) Roads passing through sand and light soil to be treated with kalar and then graded the limiting cost of construction of such roads owing to lead of kalar to be Rs. 7,000 per mile.

(C) Roads passing through sand and light soil, where kalar is not available within the limiting lead, and roads on which traffic is exceptionally heavy to be constructed of burnt brick soling with a bitumen carpet.

It was considered that many of the roads in Class B might be treated with oil instead of kalar but sufficient information is not available to go into the question of the detailed cost in comparison with treating with kalar.

2. *Cost of construction and maintenance.*—The average cost of construction was worked out on the following basis:—

Class A.—Grading per mile.

	Rs.
Original construction. Twenty feet width. Raising one foot at Rs. 7 per 1,000 c.ft.	800
One beldar at Rs. 18 for 3 miles and one darogha at Rs. 45 for 20 miles	100
Grading	25
Contingencies	75
	1,000

Maintenance and Repairs.

Establishment as before	100
Grading four times a year	100
	200

Class B.—Kalaring and Grading per mile.

12 feet width kalar side widths earth to make 20 ft. Kalar one foot depth average lead 5 miles as shown in Mr. Parikh's estimate	4,000
Establishment as in Class A	100
Earth work	320
Grading	25
Contingencies	55
	4,500

Maintenance and Repairs.

Renewing kalar (1 inch per year)	333
Grading (4 times)	100
Earth work	30
Establishment as before	100
Contingencies	37
	600

Class C.—Brick soling and bitumen carpet per mile.

Central 12′ width to be surfaced with sand and bitumen 2′ thick. Type estimate prepared by the Superintending Engineer, Indus Right Bank Circle	25,000

Maintenance and Repairs.

Renewing carpet once in 10 years	1,000
Patching	100
Establishment—one darogha Rs. 45 for 30 miles	18
Coolies	12
Contingencies	70
	1,200

3. The roads included in statements 2, 3 and 4 of Mr. Parikh's report were next considered. All roads following main or feeder railways and roads of little importance were eliminated.

The accompanying list of roads, which it is considered should be taken up, was then classified under heads A, B and C in order of priority.

A programme for ten years construction was then prepared

It will be seen that the total cost of the programme does not reach the sum of 50 lakhs proposed and the Committee consider that if this sum is available it will be advisable to take up some of the interprovincial roads in Class I of the Chief Engineer in Sind's list in preference to selecting unimportant roads from statements 2, 3 and 4 of Mr. Parikh's report. As at present proposed the roads in Class I of the Chief Engineer in Sind's list are to be brick soled and carpeted and as the number of miles of roads in this statement amounts to 600 at an approximate cost of 4 miles to the lakh, Rs. 150 lakhs are required for the work. Sind is likely to get about Rs. 4 lakhs only per year. The construction of these important interprovincial roads must therefore be accelerated from other sources.

4. The Sub-Committee have been asked to prepare a scheme for financing the roads in statements 2, 3 and 4 of Mr. Parikh's report from funds outside the petrol and within an amount of Rs. 50 lakhs extending over a period of 10 years.

The Sub-Committee are of opinion that the only source from which funds can be met is from the cess levied on the sale of lands.

Regarding the classification of roads required by Government letter No. 2231/27, dated June 11th, 1930, subsequent orders of Government issued in Memorandum No. 4860/27 of November 8th, 1930, modify this requirement and Sind roads have already been classified according to the later instruction. Hence no action on this term of reference appears necessary.

The Sub-Committee realize that their classification is oddly approximate. It has been impossible to inspect or obtain reliable information about all the roads in the statements and their proposals are based on general knowledge of the roads concerned. When the roads are inspected in detail it will probably be found that some portions proposed to be treated with kalar and grading must necessarily be constructed of brick soling and bitumen carpet and *vice versâ*.

The area concerned is so large and the opportunities for personal inspection so few that it has only been possible to give a very general idea of the type of road required and a very approximate idea of the expenditure required.

The estimated cost of oiling roads prepared by Mr. Parikh approximates closely to the cost of constructing roads in Class B and when detailed inspection has been made and further information obtained regarding the cost of oil it is probable that it will be cheaper to treat several of the roads in this class with oil instead of kalar.

List of roads in order of urgency.

Serial No.	Name of Road.	Length of the road miles.	Length under each type of construction.			Programme.
			A Miles.	B Miles.	C Miles.	
1	2	3	4	5	6	7
1	Sujwal to Ferry . . .	4	2	2	..	
2	Jhol to Sanghar . . .	7	..	..	7	
3	Oderolal to Khebar . .	4	..	4	..	
4	Tando Adam to Oderolal .	7	..	7	..	
5	Talhar to Tando Bago .	10	10	..	..	
6	Johi to Dadu . . .	12	12	..	..	
7	Jamesabad to Samaro . .	10	..	..	10	
8	Nawabshah to Shahpur .	16	..	16	..	
9	Thul to Humayun . .	16	8	8	..	
	TOTAL .	86	32	37	17	1st year.
10	Ratodero to Sujawal . .	11	11	..	..	
11	Sindri to Kipro . . .	17	5	12	..	
12	Matli to Digri (*via* Tando Culam Ali).	31	..	31	..	
13	Jacobabad to Shahdadkot *via* Rajbani Khairogarhi.	40	30	10	..	
	TOTAL .	99	46	53	..	2nd year.

Serial No.	Name of Road.	Length of the road miles.	Length under each type of construction.			Programme.
			A Miles.	B Miles.	C Miles.	
1	2	3	4	5	6	7
14	Sujawal to Shahdadkot .	13	9	4	..	
15	Sujawal to Mirpur Bathoro .	16	16	..	..	
16	Rohri to Kandhra . .	8	..	8	..	
17	Nasirabad to Warah . .	9	9	..	..	
18	Radhan Station to Mehar .	9	..	9	..	
	TOTAL .	55	34	21	..	3rd year.
19	Tatta to Kotri Allaharakhio-shah.	25	25	..	..	
20	Shikarpur to Rustam . .	9	..	9	..	
21	Oderolal to Oderolal Station .	4—1=3	..	3	..	
22	Nasarpur to Tando Allahyar.	7	..	4	3	
23	Tando Mohamed Khan to Mula Mulakatiar.	12	12	..	..	
	TOTAL .	56	37	16	3	4th year.
24	Khahi to Doro Naro . .	13	..	7	6	
25	Jatoi to Kandiaro . .	6	6	..	..	
26	Samaro to Comerkot . .	24	18	6	..	
	TOTAL .	43	24	13	6	5th year.
27	Drakhan to Madeji . .	4	..	4	..	
28	Madeji to Madeji Station .	2	..	2	..	
29	Tando Mithokhan to Sanghar	16	..	16	..	
30	Humayun to Jagan . .	6	..	6	..	
31	Hyderabad to Tando Kaiser	9—5=4	..	4	..	
32	Charo to Mirpur Sakro .	15	15	..	..	
	TOTAL .	47	15	32	..	6th year.
33	Kubi to Khipro . . .	16	8	8	..	
34	Dubak to Sehwan . .	9	9	..	..	
35	Dokri Station to Dokri .	2	..	2	..	
36	Sujawal to Ladiun . .	23	23	..	..	
	TOTAL .	50	40	10	..	7th year.
37	Mirpur Bathoro to Tando Md. Khan.	35	15	20	..	
38	Khairpur Nathashah to Sita Road Station.	8	6	2	..	
	TOTAL .	43	21	22	..	8th year.

Serial No.	Name of Road.	Length of the road miles.	Length under each type of construction.			Programme.
			A Miles.	B Miles.	C Miles.	
1	2	3	4	5	6	7
39	Tando Adam to Beraia .	9	..	9	..	
40	Bhiria to Bhiria Road . .	6	..	6	..	
41	Pithoro to Kahi . . .	9	..	9	..	
42	Talti to Bubak . . .	6	6	..	..	
43	Khipro to Tando Md. Khan .	17	..	17	..	
	TOTAL .	47	6	41	..	9th year.
44	Shahdadpur to Sinjhoro .	16	..	12	4	
45	Sher Md. Thaim to Ratodero	18	18	..	..	
46	Mirpur Mathelo to Trunk Road	5	..	5	..	
	TOTAL .	39	18	17	4	10th year.
	GRAND TOTAL .	565	273	262	30	

Ten years programme.

Year.	COST OF CONSTRUCTION.							COST OF MAINTENANCE AND REPAIRS.							Total cost of construction and maintenance.
	Length to be surfaced with various types of construction.			Cost.				Length of road to be maintained.			Cost.				
	A	B	C	A At Rs. 1,000 per mile.	B At Rs. 4,500 per mile.	C At Rs. 25,000 per mile.	Total cost for A, B and C.	A	B	C	A At Rs. 200 per mile.	B At Rs. 600 per mile.	C At Rs. 1,200 per mile.	Total cost for A, B and C.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
I	32	37	17	32,000	1,66,500	4,25,000	6,23,500	..	..	..	..	..	..	..	6,23,500
II	46	53	..	46,000	2,38,500	..	2,84,500	32	37	17	6,400	22,200	20,400	49,000	3,33,500
III	34	21	..	34,000	94,500	..	1,28,500	78	90	17	15,600	54,000	20,400	90,000	2,18,500
IV	37	16	3	37,000	72,000	75,000	1,84,000	112	111	17	22,400	66,600	20,400	1,09,400	2,93,400
V	24	13	6	24,000	58,500	1,50,000	2,32,500	149	127	20	29,800	76,200	24,000	1,30,000	3,62,500
VI	15	32	..	15,000	1,44,000	..	1,59,000	173	140	26	34,600	84,000	31,200	1,49,800	3,08,800
VII	40	10	..	40,000	45,000	..	85,000	188	172	26	37,600	1,03,200	31,200	1,72,000	2,57,000
VIII	21	22	..	21,000	99,000	..	1,20,000	228	182	26	45,600	1,09,200	31,200	1,86,000	3,06,000
IX	6	41	..	6,000	1,84,500	..	1,90,500	249	204	26	49,800	1,22,400	31,200	2,03,400	3,93,900
X	18	17	4	18,000	76,500	1,00,000	1,94,500	255	245	26	51,000	1,47,000	31,200	2,29,200	4,23,700
														TOTAL .	35,20,800
XI	..	..	..	..	..	..	..	273	262	30	54,600	1,57,200	36,000	2,47,800	*2,47,800
	273	262	30	2,73,000	11,79,000	7,50,000	22,02.000	* Recurring expenditure on maintenance and repairs after 10th year.							

3. BENGAL.

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BENGAL.

CHAPTER I.—BRIEF ITINERARY AND PERSONS INTERVIEWED.

1. *Officers deputed to assist us in Bengal.*—The Government of Bengal deputed Mr. W. J. Kerr, Chief Engineer, to assist us in our investigation of road conditions in the province.

The following Railway officers compiled for our use the facts and figures relating to their railways in the province :—

Mr. J. C. Rose, Dy. Chief Commercial Manager, Rates and Development, East Indian Railway.

Mr. G. S. Bocquet, C.I.E., Traffic Manager, Eastern Bengal Railway.

Mr. B. Mazumdar, Publicity Officer, Bengal-Nagpur Railway.

Mr. W. H. Prendergast, Personnel Officer, Assam-Bengal Railway.

2. *Places visited and persons interviewed on behalf of Government and Railways.*

(*a*) *Government of Bengal.*—During our visit to Bengal we travelled 676 miles by rail and 198 miles by road. We stayed several days in Calcutta and, while we were there, we were granted an interview by His Excellency the Governor. We also discussed the subject of our investigation with the following :—

The Hon'ble Mr. J. A. Woodhead, I.C.S., Finance Member.

The Hon'ble Mr. Bijoy Singh Roy, Minister for Local Self-Government.

The Hon'ble Mr. H. P. V. Townend, I.C.S., Secretary to the Government of Bengal, Local Self-Government Department.

(*b*) *District Officers.*—We visited Burdwan and interviewed Mr. Bose, I.C.S., Collector, and certain other District Officers. Later we had an opportunity of meeting the Chairman of the Burdwan District Board. We included Chittagong in our tour and discussed road development with Mr. Hands, I.C.S., Collector, and Mr. Bose, Executive Engineer, Public Works Department.

(*c*) *Railway Administrations.*—Calcutta being the head-quarters of the East Indian, Eastern Bengal and Bengal-Nagpur Railways, we arranged to ascertain the views of those administrations on the problems we are investigating. Meetings were accordingly held at the head-quarters office of each railway at which the following officers were present :—

East Indian Railway.

Mr. G. L. Colvin, C.B., C.M.G., D.S.O., Agent.

Mr. J. C. Rose, Dy. Chief Commercial Manager, Rates and Development.

Eastern Bengal Railway.

Mr. H. A. M. Hannay, Agent.

Mr. G. S. Bocquet, C.I.E., Traffic Manager.

Mr. H. D. Creedy, Dy. Agent.

Bengal-Nagpur Railway.

Mr. V. E. D. Jarrad, Agent.

Mr. T. M. Neely, Commercial Manager.

Mr. Leigh Bennett, Transportation Superintendent.

At Chittagong we visited the head-quarters of the Assam-Bengal Railway and collected information from Mr. Nolan, Dy. Agent, and Mr. Prendergast, Personnel Officer. We had previously met Mr. Boyagian, the Agent of the Railway at Shillong where he was attending a meeting convened by the Government of Assam in connection with our enquiry.

(*d*) *Railway Divisional Officers.*—We called on Mr. Yule, Divisional Superintendent, E. I. Railway, Asansol, and Mr. Marriott, Divisional Superintendent, E. I. Railway, Howrah, and obtained from them particulars of the effect of motor competition on their divisions.

3. *Interviews arranged with representatives of other interests.*—During our stay in Calcutta we arranged meetings with the representatives of the following organizations :—

(i) Indian Tea Association—

Represented by Mr.T. C. Crawford, Chairman.

,, ,, J. A. Brown, Vice-Chairman.

,, ,, R. W. B. Dunlop.

(ii) River Steam Navigation Company—

Represented by Mr. G. W. Leeson, of Messrs. McNeil & Coy.

(iii) India General Navigation Company—

Represented by Mr. McDougal, of Messrs. Kilburn & Co.

(iv) Bengal Branch : Indian Roads and Transport Development Association—

Represented by Mr. J. R. Farquharson.

,, ,, J. W. Ross.

,, ,, G. V. Pottinger.

(v) Motor Industries Association—

Represented by Mr. W. H. Lock.

,, ,, J. W. Ross.

,, ,, W. K. Battey (Secretary).

(vi) Various Light Railways—

Represented by Mr. J. J. Godfrey, of Messrs. McLeod & Co.

„ „ D. Y. Anderson, of Messrs. Martin & Co.

„ „ T. S. Gladstone, of Messrs. Gillanders, Arbuthnot & Co.

Mr. G. R. Dain, C.I.E., Agent of the Calcutta Tramways, furnished us with much useful information in connection with our enquiry.

4. We take this opportunity of expressing our thanks to all the above for the assistance they have given us in assembling the material in this report.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

5. *Communications.*—Owing to the deltaic nature of parts of Bengal, to numerous waterways, and to widespread inundation, the provision and maintenance of communications, particularly of roads, have aspects peculiar to the Presidency. A statistical comparison of milages of roads and railways with those of other parts of India will thus only be of modified interest.

The area of Bengal is 76,843 square miles, and the population, according to the 1931 census, is about 50 million, of which just over one million are in Calcutta. There are some 3,450 miles of railway made up of broad, metre and narrow gauge; the principal railways serving the Presidency being the East Indian, Bengal-Nagpur, Eastern Bengal and Assam-Bengal. There are also the Bengal-Dooars and the Darjeeling-Himalayan Railways in the north and a number of light railways in the south and the neighbourhood of Calcutta. There are, in all, some 36,650 miles of extra municipal roads maintained by public authorities of which 3,500 are metalled (925 miles "Provincial" and the balance in charge of District Boards). The rest are almost entirely in the charge of District Boards. Of the metalled roads 1,234 miles are parallel with railways and within 10 miles of them, that is 35 per cent of the metalled road milage is parallel with railways and 36 per cent of the railway milage has a metalled road parallel with it and within 10 miles. Finally there is a very large milage of inland waterways regularly used by steamers and a very much greater milage of waterways of which no statistics are available used by country boats of various sizes. On the provincial map which we are reproducing the inland steamer routes have been shown.

6. *Improved unmetalled roads.*—Generally speaking, except possibly in the Dooars, little has been possible in recent years in the direction of improving unmetalled roads by drainage, grading, and so forth. One reason is that in flooded country roads must be in high bank and high banks are usually too narrow for good earth roads. But, if progress is to be made in future, something intermediate is necessary between a neglected unmetalled road and a metalled road costing as much as Rs. 20,000 per mile to construct and say Rs. 1,500 per mile per year to maintain.

7. *Uneven distribution of roads.*—As far as metalled roads are concerned, a glance at the map will show that they are must unevenly distributed. The Grand Trunk Road from Calcutta through Burdwan to Asansol is the principal highway of the Presidency and there is a more or less developed road system in its immediate vicinity and to the west and south of it; but in the whole of Eastern Bengal and to the north and east of the Grand Trunk Road there is, with the exception of the Dooars and Darjeeling, practically no metalled road of any length or importance. This is doubtless due to the heavy expenditure that would

be required to build and bridge metalled roads in flooded country having no stone or other hard material, and to the alternative means of transport afforded by waterways and railways. There can, however, be no doubt that a planned system of roads is badly needed in many parts and would be of very great value.

8. *Classification of roads.*—As will be seen from the figures we have quoted, the majority of roads are in the charge of District Boards.

9. *Expenditure on roads.*—The expenditure on roads of all classes up to the year 1926-27 was given in the statement at page 94 of the report of the Indian Road Development Committee. We have endeavoured to ascertain what might be described as the subsequent normal expenditure upon roads from provincial and local funds prior to the present financial depression, but unfortunately in the time at our disposal the information furnished with respect to local bodies could not be completed. The expenditure from provincial revenues on provincial roads has, however, been as follows :—

	Original works.	Repairs.
1927-28	6,77,719	25,38,942
1928-29	5,82,333	23,92,284
1929-30	2,16,037	23,51,297
1930-31	5,18,916*	21,61,071

* Includes Rs. 4,40,849 from the Central Road Development account.

10. *Communications in relation to area and population served.*—While statistical information in respect of Bengal cannot readily be compared with that of other provinces, and although we have not obtained particulars of the length of inland waterways other than steamer routes, nevertheless we have in Appendix 1 as usual calculated the wealth of the Presidency in roads and railways, on the basis of the area comprised by districts having a density of population of not less than 100 per square mile. It will be seen that over that area the average density of population is 679 per square mile ; that the average area served by one mile of railway is 20·78 square miles, while that served by a mile of metalled road is as much as 20·5 square miles. The total length of all roads, however, is high in relation to the area and for every mile of road of all sorts, there is but 1·8 square miles of area, so that, if the existing roads could be improved and maintained to a substantially higher standard, the Presidency would be well provided. The area more than 10 miles from any railway amounts to about 40 per cent. of the total area with a density of population of 100 and over, and the area distant more than 10 miles from either a railway or inland steamer route is 21 per cent of that total. We would emphasise, however, the fallacy inherent in statistics for the whole or practically the whole of an area of such divergent characteristics as Bengal, although we give them for what they are worth.

11. *Present condition of metalled roads.*—Generally speaking the condition of metalled roads in the Presidency is said to be deteriorating.

Funds have for some years been inadequate and have been allotted even more sparsely in the last one or two years. Motor traffic has increased and roads of water bound macadam, especially when narrow and restricted as is frequently the case in Bengal, cannot be expected to withstand the combined action of bullock carts, motor transport, and an intense monsoon. A certain amount of reconstruction has been possible with the aid of the central road development account, but in any future plan of road development the first points to be considered will be the claims of existing roads and ultimate ability to maintain any additional improved or metalled milage.

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

12. *Railways serving the province.*—The province of Bengal is served by four of the more important Railway Administrations, the East Indian, the Bengal-Nagpur, the Eastern Bengal, and the Assam-Bengal Railways. The first two, which connect Calcutta with the West and North-West, are confined to the districts west of the River Hooghly and are of standard gauge.

The Eastern Bengal Railway which is partly standard gauge and partly metre gauge serves the greatest area in the province; the broad gauge main line runs north of Calcutta to Siliguri and forms the stem from which many branches, of both broad and metre gauge, spring, serving the country on either side. A metre gauge section, isolated from the rest of the system by the Ganges and Jamuna rivers, traverses the Dacca and Mymensingh districts.

The Assam-Bengal Railway is wholly metre gauge and for the greater part of its length is confined to the province of Assam, but it has its head-quarters at Chittagong and serves the district of that name as well Noakhali and Tippera, and the eastern part of the Mymensingh district, where it meets the metre gauge of the Eastern Bengal Railway serving the Dacca and Mymensingl districts.

Besides the larger railways mentioned above, there are in Bengal several small independent branch lines and light feeder railways. Some of these, such as the Kalighat-Falta, the Howrah-Amta, the Howrah-Sheakhala, the Baraset-Basirhat, and the Bengal Provincial Railways, are small lines serving the suburbs of Calcutta; others, again, such as the Bankura-Damodar River, the Burdwan-Katwa, the Ahmedpur-Katwa, and the Jessore-Jhenida are feeder lines to the broad gauge railways. The Howrah-Amta and Howrah-Sheakhala lines are of 2′ 0″ gauge: all the rest are 2′ 6″.

To the north of the province are the more important Bengal-Dooars Railway with a milage of 156 metre gauge and the 2′ gauge Darjeeling-Himalayan Railway which, with its extensions has a total milage of 151, part of which penetrates the Purnea District of Bihar and Orissa.

A.—East Indian Railway.

13. *Area served, and roads parallel with E. I. Railway.*—The East Indian Railway has a milage of approximately 600 in the province, serving the districts north-west of Calcutta. Parallel with the main line, for the whole of its length from Calcutta to Barakar on the western edge of the province, runs the Grand Trunk Road—a distance of 150 miles. Bus competition is naturally most felt in connection with this

road, though in the neighbourhood of Calcutta its thoroughfare is so narrow and its alignment generally so unsuitable for fast traffic that it cannot be regarded as a very serious competitive route, so far as passengers are concerned, except perhaps for short-distance urban services.

The following competitive bus services are being run on the Grand Trunk Road and it will be noted that most of these are for comparatively short lengths :—

Section.	Milage.		No. of buses.	Fares.	
	By rail.	By road.		By rail.	By road.
				Rs. A. P.	Rs. A. P.
Howrah-Bally-Khal	6	6	24	0 1 9	0 2 3
Bally-Khal-Serampore	7	8	32	0 [illegible] 0	0 2 6
Serampur-Chinsura Court	11	13	28	0 3 3	0 5 0
Chinsurah Court-Tribeni	8	9	4	0 2 3	0 4 6
Burdwan-Memari (*en route* Kalna Court).	16	17	2	0 5 0	0 5 0
Burdwan-Masagram (*vid* Memari-*en-route* to Chakdighi).	15	21	1	0 4 0	0 4 0
Burdwan-Mankar	23	25	2	0 7 0	0 10 0
Asansol-Gopalpur-Panagar	35	37	2	0 10 3 (*a*)	0 13 0 (*b*)
Raniganj-Asansol	12	7	9	0 5 0	0 4 0
Raniganj-Barakar	22	25	6	0 10 0 (*a*)	0 8 0 (*b*)
Asansol-Barakar	11	12	10	0 5 0	0 4 0

(*a*) Return journey. (*b*) Single journey.

It may be remarked that the bus fare in many cases is higher than the rail fare, and presumably in such cases the extra convenience offered by the buses in giving a door to door service is sufficient to counteract the effect of the extra fare charged.

In addition to the bus services on the Grand Trunk Road there are a few services over other roads :—

Section.	Milage.		No. of buses.	Fares.	
	By rail.	By road.		By rail.	By road.
				Rs. A. P.	Rs. A. P.
Sheoraphuli-Singur	7	8	2	0 2 0	0 2 0
Sainthia-Suri	12	13	8	0 4 0	0 6 0
Suri-Dubrajpur	12	7	3	0 3 6	0 6 0
Ondal-Ukhara	8	7½	1	0 2 6	0 5 0
Pandaveswar-Asansol	29	24	2	0 8 0	0 6 0
Asansol-Rupnarainpur	13	14	1	0 3 9	0 8 0

The East Indian Railway also report a few cases where bus services short-circuit the Railway. These are as follows :—

From	To	Milage.		No. of buses.	Fares.	
		By rail.	By road.		By rail.	By road.
					Rs. A. P.	Rs. A. P.
Uttarpara . .	Dankuni . . *en route* for Chanditala.	7	4	8	0 2 0	0 2 0
Burdwan . .	Kalna Court .	68	36	2	1 2 0	1 2 0
Bolpur . .	Suri . . .	32	22	1	0 10 0	0 8 0
Ahmedpur .	Suri . . .	21	8	11	0 6 3	0 6 0

In two of these cases we think that the distance by road is so short that it may reasonably be doubted whether even before the days of motor transport, the public used the railway ; in the other two cases the number of buses plying is so limited that the competition is scarcely appreciable, and it is questionable whether the railway could provide services equal to the bus.

14. *Estimated losses incurred by the East Indian Railway owing to bus competition.*—If the short circuiting buses are excluded there are about 136 buses running in competition with the East Indian Railway in the province, and in framing an approximate estimate of the losses due to these the Railway Administration has taken the following factors :—

Number of buses running competitive services	136
Average milage of bus trip	14·5
Fare	3 pies per passenger mile.
Average seating capacity per bus	18·8

It is assumed that with an average milage as limited as 14·5, each bus runs 2 trips daily and that, as it is reported there is no unemployment among the buses as in other provinces, the buses run continuously throughout the year. We hardly think that the latter assumption is justified, and consider that the estimate below may therefore be somewhat on the high side. The calculation is as follows :—

$$\frac{136 \times 29 \times 3 \times 18{\cdot}8 \times 365}{16 \times 12} = \text{Rs. } 4,22,870.$$

15. *Transport of merchandise by road : report of the East Indian Railway.*—The East Indian Railway reports that goods (chiefly vegetables, country tobacco and miscellaneous articles) are being carried by lorry between Calcutta and Katwa—107 miles, Calcutta and Raniganj—120 miles, and Calcutta and Asansol—131 miles. Moreover, it is stated that since 1925 the traffic in piece goods between Calcutta and Burdwan—67 miles—has steadily fallen off and that at present practically all of it is being carried by road. Other traffic, which has also been diverted from the railway to the road, affecting Burdwan and other

stations in the neighbourhood, includes lubricating oil, vegetable oil, coir rope and string, gunnies, sugar, aluminium ware, spices, rice, and oil cake. The advantages of such lorry transport are obvious: the service provided is practically door to door and delivery is therefore quicker; no delay (such as is inevitable at the Howrah goods-shed) is occasioned by the preparation of forwarding notes, invoicing, and the issue of receipts; and carting and other incidental charges at the forwarding and destination stations are avoided.

The East Indian Railway admits that it sometimes takes 3 days before a consignment booked at Howrah is available for delivery at Burdwan, and the possible speeding up of the transit time of this traffic is now being investigated. We were told that in some instances merchants themselves from the towns and villages in the neighbourhood of Burdwan go to Calcutta to make their purchases and take them straight to destination by motor lorry. A certain amount of canvassing has been done among these men and it has been suggested that they would be spared the expense of a journey to Calcutta if reliable commission agents could be appointed to book their goods at the Howrah goods-shed. But the railway would still have to arrange quick transit and delivery at destination to compete with the present lorry services. It is noticeable that the merchants are ready to pay for the lorry service an appreciably higher charge than the total rate by the rail route. The maund rate by lorry is stated to be 0-7-6, whereas the highest class rate for the commodities mentioned above is 0-4-2 per maund, and even if to this are added the expenses of cartage in Calcutta and delivery in Burdwan, the total charge per maund by the railway route would still not exceed 0-6-2.

16. *Potato traffic ex-Memari and Debipur stations.*—The East Indian Railway reports that there has been a considerable decrease in the potato traffic which used to be booked from Memari and Debipur stations to Magra Hat (between Calcutta and Diamond Harbour on the Eastern Bengal Railway) and to Sheoraphuli. The traffic is now usually carried by public lorries belonging to Calcutta and Howrah, and these are specially arranged for when required. The lorry, of course, provides quicker transit, door to door service, and it is more attractive in so far as that prepayment of freight charges is not demanded. The lorries permit the owners of goods to travel free of charge and thus the owners avoid all possibility of thefts. Attempts have been made to attract this traffic once more to the rail, but have not been successful. The East Indian Railway reports that during the winter season January to March 1929, 57 wagon loads were booked to Magra Hat and 110 consignments of smalls to Sheoraphuli, but during the same season of the current year only 4 wagon loads were booked to Magra Hat and only 8 consignments of smalls to Sheoraphuli.

17. *Volume of Traffic by lorries.*—Apart from the potato traffic, the East Indian Railway has not furnished us with figures showing the volume of traffic carried by lorries and no estimate can therefore be attempted

of the losses incurred by the railway owing to these services. We would suggest that a closer check be made of the volume of traffic passing; if the amount is considerable it would certainly seem worth while organising collection and delivery at the forwarding and destination stations and quick transit over the railway in order to recover for the railway the traffic it has lost. Most of it is short distance traffic, but Katwa, Ranigunj and Asansol are all over 100 miles from Calcutta, and this indicates that the railway long distance traffic may in time be affected. It may be remarked that the local Government in their written reply to the questionnaire circulated by the Indian Road Development Committee recognized that motor transport might in time affect long distance, as well as short distance, railway traffic.

In connection with these lorry services one point was brought to our notice which should be mentioned. It was alleged that most of the lorries move by night, partly perhaps in order to ensure delivery next day, but partly on account of the fact that many of them exceed one ton in capacity which is the limit at present imposed by the Burdwan District Board on motor vehicles using the roads in the District.

B.—Bengal-Nagpur Railway.

18. *Motor competition: Bengal-Nagpur Railway.*—The milage of the Bengal-Nagpur Railway serving the province is approximately 236, and practically the whole of this has metalled roads running alongside. Motor competition, however, has not reached an extensive scale and the railway only reports the following competitive services running at present :—

	Miles.
Howrah-Ramrajatala	4
Ulubaria-Kulgachia	5
Kharagpur-Contai	22
Burnpore-Asansol	4
Garbeta-Midnapore	30
Bankura-Vishnupur	19

Three of these services are virtually urban in character, and the railway cannot, we think, reasonably hope to compete with them. In estimating losses due to these services the railway has taken :—

(*a*) The number of seats.

(*b*) The number of trips per day based on the following assumption :—

6 round trips for services within 10 miles.

4 round trips for services exceeding 10 miles but less than 20 miles.

2 round trips for services exceeding 20 miles.

(*c*) 300 working days a year, and

(*d*) Third class Railway fare.

The estimated loss based on these factors work out to about Rs. 85,685. The sum involved is inappreciable and we make no attempt to cross check it.

The Bengal-Nagpur Railway report that, so far, the carriage of goods traffic by motor transport has not developed in competition with that of Railway in Bengal.

C.—Eastern Bengal Railway.

19. *Views of the Eastern Bengal Railway on Road Development.*—The Eastern Bengal Railway serves a greater area in the province than any other railway, but owing to the deltaic character of most of the country traversed by its lines, especially in the South, it has, proportionately, a less milage of metalled roads running parallel with it. The Eastern Bengal Railway has, however, expressed to us very definite views on the road policy now being followed in the province, which, in the opinion of the railway, must if continued intensify motor competition and adversely affect the railway. The Railway Administration states that most of the money now spent on roads is being devoted to the improvement of such roads as the Jessore Road, the Diamond Harbour Road, the Ghospara Road and the Dacca Narainganj Road, all of which are schemes which have been approved of by the Government of India as eligible for grants from the Central Road Development Account. The railway points out that these roads all run closely parallel with railway routes and will encourage motor competition. It further reports that the Bengal Provincial Road Board has under contemplation two other road schemes which will stimulate motor competition :—

(*a*) A road between Krishnagar and Jaguli, which linked up with other roads, will ultimately provide a through main road between Calcutta and Krishnagar, and

(*b*) A road between Jalpaiguri and Siliguri.

Again, the Provincial Road Board has called for estimates for reconstructing the old military road running between Godagari Ghat and Siliguri. This road is parallel with, but at a considerable distance from, the main line of the Eastern Bengal Railway and the railway representative at the Provincial Road Board meeting at which the scheme was discussed pointed out that while the proposed road would not adversely affect the railway but would feed certain stations on its branch lines, it was difficult to see what purpose so costly a scheme would serve. He remarked that for the same sum many feeder roads of which the railway has been in need for years could be constructed.

As against the road development schemes mentioned above, the Railway Administration claims that virtually nothing is being done to improve or construct feeder roads which have been an urgent need for years past, and it contends that, unless the road policy pursued by the province is changed, feeder roads are still likely to be neglected for many years.

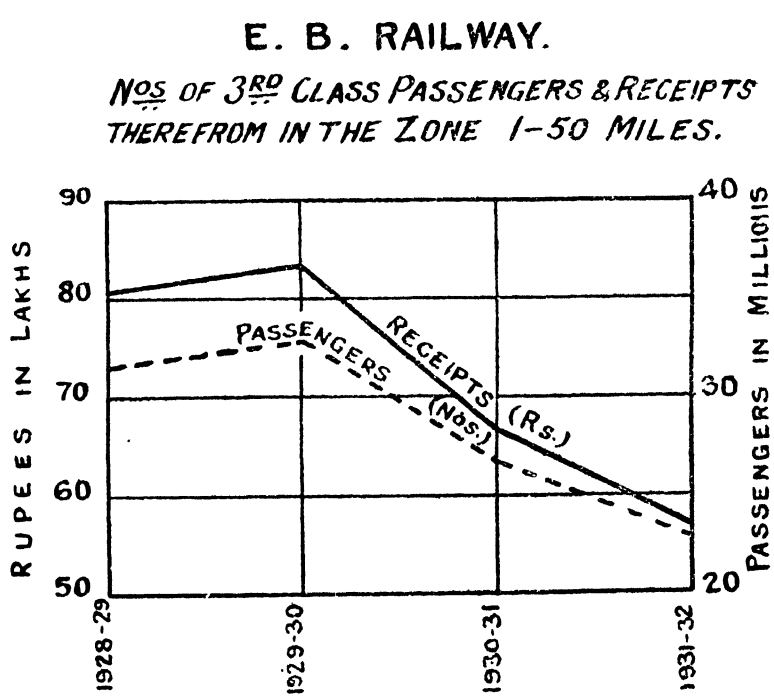
Doubtless these views will be regarded by the local Government as being confined to a narrow angle, but we consider that they should be recorded. Obviously, the Eastern Bengal Railway has devoted, and is devoting, considerable attention to road development, so far as it concerns that system. We may observe that, four years ago, in answer to the questionnaire circulated by the Indian Road Development Committee the Eastern Bengal Railway, almost alone among railways, forwarded a very complete list of feeder roads which it required either to be improved or constructed, to serve its system. It is reported there

that conditions are practically the same now as they were in 1928 when this list was submitted and the railway has furnished us, in connection with our report, with a comprehensive list of feeder road requirements and this we deal with in its proper place under Chapter VI.

20. *Estimated losses due to motor competition.*—The Eastern Bengal Railway reports that motor competition is chiefly felt in the neighbourhood of large towns served by the system, especially in Calcutta and the suburbs and in the neighbourhood of Dacca. The railway has a very heavy suburban traffic, and the short distance 3rd class passenger traffic in the zone 1-50 miles (which is of course the zone chiefly affected by motor competition) contributes as much as 38 per cent. of the total revenue derived from the 3rd class passengers over the whole system. The number of 3rd class passengers travelling in the zone 1-50 miles, and the earnings derived from them during the four years 1928-29 to 1931-32 were as follows :—

	No.	Rs.
1928-29	31,607,363	80,32,077
1929-30	32,910,035	83,59,801
1930-31	26,817,501	66,61,534
1931-32	22,999,028	56,79,491

These figures are shown in a graph below :—



Many difficulties prevent any reasonable estimate being framed of the losses involved owing to motor competition, but we think it is possible to make certain deductions from these figures. On most railways motor competition started to make itself felt in the year 1928-29, but it will be seen that on the Eastern Bengal Railway during the year 1929-30 short distance 3rd class passengers and earnings showed an increase and the first decrease only appeared next year. Between the years 1929-30 and 1931-32 there was a decrease in earnings of no less than Rs. 26,80,310 or about 32 per cent. A large proportion of this must necessarily be due to trade depression and it is difficult of course to separate the decrease on this account from that due to motor competition. On the N. W. Railway an attempt was made to do this in connection with certain branch lines carrying considerable passenger traffic. Figures were first taken out for typical branch lines unaffected by motor competition and it was found that between a normal year and the year 1931-32 there was a decrease on these lines of about 17 per cent. in the passenger earnings which may be reasonably attributed solely to trade depression. On other branches where there is intense motor competition it was found that the decrease in earnings between a normal year and the year 1931-32 was 23 per cent. It was felt that the extra 6 per cent. might be assumed as due to motor bus competition.

We might apply a similar method to the short distance earnings of the Eastern Bengal Railway between 1929-30 and 1931-32. As already stated the decrease amounts to Rs. 26,80,310 or 32 per cent. as against 23 per cent. on the North Western Railway. The higher percentage may, perhaps, be due to the E. B. Railway serving the intensely industrial area in the neighbourhood of Calcutta, where the trade depression would be more severely felt than in the agricultural districts of the Punjab. If we divide the 32 per cent. decrease between trade depression and motor competition in the same ratio as adopted by the North Western Railway, we might assign about 23·5 per cent. to the first, and 8·5 to the second. This would place the loss at Rs. 7,11,957. We think that the annual loss suffered by the railway may be in the neighbourhood of Rs. 7,00,000 and most of this occurs in the province of Bengal, a very small proportion being attributable to motor bus services competing with the railway in the Purnea district of Bihar and Orissa.

21. *Losses incurred by the Eastern Bengal Railway due to Goods Traffic.*—The railway reports that in its southern section motor competition for the carriage of goods has developed chiefly in connection with vegetable parcels and rice and paddy traffic from stations on the Baruipur—Lakshmikantapur section. The railway, however, has not furnished any estimate of the losses involved.

D.—Assam Bengal Railway.

22. *Motor Competition.*—This metre gauge system has a total milage of 1,307 of which about 376 are in the province of Bengal. Metalled roads run parallel with the railway only for a few miles in the neighbourhood of Chittagong and Noakhali, but the railway reports that com-

petitive bus services have developed on these roads and a certain amount of passenger traffic is being lost in consequence. The particulars given to us are as follows :—

	Miles.		Estimated loss.
	Road.	Rail.	
			Rs.
Chittagong to Hathazari	14	14	14,000
Chittagong to Dhoom	44	44	12,000
Noakhali to Sonaimuri	15	15	5,000*
			31,000

* Buses ply in cold weather only.

No competitive motor services for the carriage of goods traffic are reported.

23. *Assam Bengal Railway and the Chittagong-Arakan Road.*—Thus, so far, motor competition has hardly touched the Assam Bengal Railway in Bengal, but the Railway Administration has expressed to us considerable concern at the prospect of the competition which is likely to arise between the projected railway line from Chittagong to Arakan, and the road contemplated by the local Government between the same points. The Assam Bengal Railway has constructed the line towards Arakan as far as Dohazari, a distance of about 22 miles or less than one-third of the total of railway or road that would lie in Bengal; work further to the South being deferred for the time owing to want of funds. The local Government, for administrative reasons, wish to develop communications in this area and regard the matter of such urgency that they consider the construction of the proposed road cannot be postponed pending possible resumption of work on the proposed railway. Accordingly, it is intended to expend Rs. 5 lakhs of the provincial allotment from the Central Road Development Account on constructing two large bridges between Chett and Dohazari; on certain bridges between miles 20 and 30; and on earth work; these works forming a stage towards the construction of a trunk road right through the area to be served by the proposed railway to the border of Burma. The Government of India have approved of this scheme as being eligible for expenditure from the provincial share in the Central Road Development Account

The prospects of the proposed railway are reasonably good but they are, to a great extent, dependent on an all round traffic in passengers and merchandise, local as well as through. There is a considerable through passenger traffic anticipated owing to the periodical movement of labour between Chittagong and the South; moreover, the Railway Administration informs us that if the railway is constructed it would certainly carry considerable traffic in rice of which there is a large exportable surplus in the area to be served and which cannot be carried by road. Some of this rice traffic at present finds its way by boat to Chittagong, but the Assam Bengal Railway officials are confident that

it will be diverted to the railway when the railway is built. The country to be served by the railway is a comparatively narrow strip between the Hill Tracts and the sea, so there is no possibility of aligning the road at such a distance from the railway as to mitigate the effect of competition : naturally the road and railway must both serve the populous centres.

When the Assam Bengal Railway learnt that this road scheme was being financed from the Central Road Development Account they drew the attention of the Railway Board to the probable effects of the scheme on the proposed railway, and it was suggested that the Railway Administration should approach the local Government on the subject and represent the railway point of view. To investigate the question the Government convened a Committee consisting of :—

The Commissioner of the Division (Chairman).

1. The Collector.
2. The Superintendent of Police.
3. The Chief Engineer, Public Works Department.
4. The Superintending Engineer, Public Works Department.
5. The Vice-Chairman of the Chittagong District Board.
6. Haji Badi Ahamad Chaudhuri, M.L.C.
7. Mr. Boyagian, Agent, Assam Bengal Railway.

This Committee decided that the construction of the road should be carried on, the voting being five to two. The Collector, the Superintendent of Police, the Chief Engineer, the Superintending Engineer, and the Vice-Chairman of the District Board voted for the road ; Haji Badi Ahamad Chaudhuri, M.L.C., and Mr. Boyagian voted against it.

The Collector and the Superintendent of Police urged that the road would be most useful for touring work and the Collector further remarked "Roads are more convenient for the general public for short distance travelling and this really does not amount to undesirable competition with the Railway." The only member of the committee, other than the Agent of the Assam Bengal Railway, who voted against the road was Haji Badi Ahamad Chaudhuri, M.L.C., and he did so on the grounds that the road was likely to create undesirable competition with the railway ; he favoured feeder roads say from Patiya to Anwara, from Ramu to Cox's Bazar, from Satkania to Banskhali, or a road proceeding south from Chittagong through Julda.

The Agent of the Assam Bengal Railway pressed for the abandonment of the road project on the grounds :—

(*a*) That it would be bound to create competition with the Assam Bengal Railway now built up to Dohazari and with further extensions that may be built up to Akyab (the line up to Akyab is already surveyed).

(*b*) That if the road were improved from Dohazari south it would prejudice the prospects of the railway getting funds to extend south towards Akyab.

(*c*) Feeder roads such as—

(1) Anwara-Kanchanagar or Patiya,

(2) Banskhali to Satkania
would be of immediate utility to the public and advantage to the Railway.

(*d*) The Arakan Road is in such a poor state that a very large sum would be required to put it in order and the Rs. 5 lakhs available would not do this. This sum spent on smaller roads would give satisfactory results.

(*e*) As far as is known the Burma authorities are not interested in the road and do not intend carrying through any road in their territory.

(*f*) Feeder roads would give direct benefit to more persons than would the approved project. Until the district is advanced enough to provide traffic for both rail and road, only one running north and south would be justified.

The Commissioner in reporting the minutes of the meeting to the Government added the following remarks :—

"My own opinion is that none of the feeder road projects are of the importance that would justify expenditure of Road Fund money. The Arakan Trunk road is of this importance, would be invaluable to administrative officers and would benefit the people of the district even if it only was carried through to the southern boundary of the district."

"The question of competition with the Railway is unfortunate, but as it is impossible to ascertain when the Railway will have funds to continue their line south of Dohazari and as the Road Fund has the money now to do this, I favour utilizing the latter to improve immediately communications south of Dohazari. I favour carrying out of the Arakan Trunk Road project in the manner indicated by the Superintending Engineer."

We have enlarged on this case because we think it throws into strong relief the divergence of interests likely to arise under existing conditions. Without in the least desiring to criticise the composition of the committee, we would observe that the votes of the Collector, the Superintendent of Police, the Chief Engineer, and the Superintending Engineer, interested as they naturally are in the development of administrative facilities, could not have been otherwise. On the other hand, the interests of the railway being only represented by its Agent it is hardly surprising that he was so considerably out-voted.

It is clear from opinions expressed to us while we were in the province that there is a strong local demand for this road. The strip of country to be served, however, is so narrow that under existing conditions we doubt whether expenditure of public funds on both the road and the railway could be justified. We think that having regard to the fact that rice is largely exported by water and labour can move by sea, the road may be a reasonable alternative to the railway, but we consider that this is definitely a case where the Government of India should settle with the local Government which of the two is to be provided.

E.—Light Railways.

24. *Importance of Light Railways from the public point of view.*—Though they necessarily operate in a very confined sphere of activity compared with the large railway administrations, it must not be overlooked that the prosperity, or otherwise, of light railways is also a matter of public importance, as all of them are guaranteed a fixed minimum rate of interest on their capital, either by the Secretary of State, or by the Provincial Government, or by a District Board. Motor competition has become a serious question with many of them, and, proportionately, has affected some of them far more than the larger railways.

25. *Bengal Light Railways and their Managing Agents.*—As has already been observed Bengal has a comparatively large milage of light railways, and as the Managing Agents of most of them are established in Calcutta, we decided while we were in that city to convene a meeting of the railway representatives of the firms in question. This meeting was opportune, for we learnt from the gentlemen attending it that, subsequent to our departure on tour, the Managing Agents of all light railways in India had through Messrs. Killick, Nixon & Co. addressed a joint letter to the Chief Commissioner of Railways on the subject of motor competition and its serious effect on many of the light railways throughout India. We print a copy of this letter as Appendix 2.

The firms in Calcutta who are the Managing Agents of the various light railways in Bengal are Messrs. Gillanders Arbuthnot & Co., Messrs. Martin & Co., and Messrs. McLeod & Co., the two former being also Managing Agents of certain light railways outside the province. The light railways in Bengal in which these three firms are interested are as follows :—

——	Railway.	Gauge.	Milage.
(1) Messrs. Gillanders Arbuthnot & Co.	Darjeeling Himalayan Railway.	2′	51
	Darjeeling Himalayan Extension.	2′	100*
	Mymensingh Bhairab Bazar Railway.	3¾′	100 (worked by the Assam Bengal Railway).
	Sara Sirajganj Railway	5′ 6″	53 (worked by the Eastern Bengal Railway).
(2) Messrs. McLeod & Co.	Ahmadpur-Katwa Railway.	2′ 6″	33
	Burdwan-Kutwa . .	2′ 6″	33
	Bankura-Damôôdar River	2′ 6″	60
	Kalighat-Falta . .	2′ 6″	26
			152
(3) Messrs. Martin & Co.	Howrah-Amta . .	2′	43
	Howrah-Sheakhala .	2′	19
	Baraset-Basirhat . .	2′ 6″	52
			114

* Including about 30 miles in the Purnea District of Bihar and Orissa.

We give below a brief account of a general discussion we had with the Managers of the Railway Department of these three firms and then detail, in a short paragraph devoted to each, their individual experiences and their opinions as to the best way to meet the competition.

General Discussion.—The letter printed as Appendix 2 was discussed and the light railway representatives emphasised the four points referred to in paragraph 5. These are :—

(1) The possibility of increasing the speed permitted on light railways.

(2) The introduction of cheaper fares.

(3) The unfair burden of Octroi and Terminal Taxes.

(4) The need for keeping a census of road borne traffic.

As regards (1), it was pointed out that, at present, 20 miles an hour was the maximum usually permitted on 2′ 6″ gauge lines, and 15 miles on 2′ gauge lines, and although, of course, speeds had to be limited over curves, an important limiting factor was the maximum speed allowed over handlocked facing points, which at present is only 10 miles an hour, We are satisfied that the present speed restrictions over these railways generally makes it impossible for them to compete with bus services.

(2) As regards the question of cheaper railway fares, the representatives pointed out that in connection with those railways which they themselves managed, much had been done to lower fares to meet bus competition, but they admitted that in those cases where this had been done though the number of passengers had increased, they had not done so to the extent of bringing passenger earnings back to their former level. The representatives suggested, however, that on the light lines worked by the larger railways, more attention might be given to cheaper fares.

(3) As regards Terminal Taxes, we were not given particulars of any case affecting light railways in Bengal.

(4) As regards the census of road borne traffic, we feel that this is a matter requiring urgent attention. There are several authorities interested in the density of motor traffic passing along the roads ; as for instance, the civil authorities, the police, the authorities responsible for the upkeep of the roads and the railways and we think it ought to be possible to arrange in the interest of all these a co-ordinated census of motor transport using the roads.*

After the letter had been discussed the representatives of the firms were asked whether they would be prepared to operate motor services on the roads if the present restrictions imposed on the railways referred to in Section 51(*e*) of the Railway Act and clause 4 (*c*)of Statute 42 and 43 Victoria, Chapter 41, were removed, and they said that they would. At present guaranteed railways and domiciled railway companies are by Statute only allowed to run motor services provided such services are run in connection with the railway, *i.e.*, for the interchange of traffic

* We shall refer to this subject again in the general portion of our Report.

with the railway. A passenger travelling in a motor vehicle run by one of these railways must in the course of his journey pass over some part of the railway as well as the road. Many of the light railways run alongside the main road and even on the main road itself, and during the last few years their passenger traffic has been rapidly taken from them by motor vehicles plying over these roads. The Managing Agents of the light railways are, therefore, anxious to have all existing legal restrictions removed, so that they may have it in their power to operate motor services themselves on the roads alongside their track, picking up and setting down passengers at any point on the road as they may consider desirable, just as the buses running in competition with them now do. The representatives admitted, however, that if the present unrestricted competition between public motor vehicles was allowed to continue the Managing Agents might find it difficult to compete with the owner driven buses now operating on the road. In this connection they asked us whether, if powers were granted to the light railways to operate motor transport freely between any points served by such railways, the various other restrictions now imposed by the Railway Act, for instance, as regards inspection, time tables, fares, hours of work, etc., would be extended to such motor transport services. We were not, of course in a position to reassure them on this point, though we agreed that it appeared to be logical that the light railway companies should be allowed to operate motor services on precisely the same conditions as the proprietors of public motor buses.

26. *Messrs. Gillanders Arbuthnot & Co.*—This firm operates the Darjeeling Himalayan Railway and the Darjeeling Himalayan Railway Extension, and they complain that it is on the first of these lines that they have experienced the most serious competition. The earnings from passenger traffic on the railway have declined from Rs. 4·75 lakhs in 1926-27 to Rs. 2·37 lakhs in 1931-32. Upper class traffic will, it would seem, soon disappear altogether and although rates have been lowered in an endeavour to retain 3rd class passenger traffic, the revenues from 3rd class passengers have declined from Rs. 2·50 lakhs in 1926-27 to Rs. 1·66 lakhs in 1931-32. It is, of course, true that some of this loss is attributable to general depression, but the number of motor vehicles on the road between Siliguri and Darjeeling has increased considerably, and it is only the restriction now imposed by Government on the number of buses running that prevents further loss.

As regards goods traffic, the railway has at present only suffered a slight fall in earnings, but lately it has been necessary to lower rates on certain articles in order to compete with motors and we were informed that the Bengal Government has under consideration a proposal to allow an increase in the number of lorries carrying goods between Siliguri and Darjeeling from 12 to 40 and if this is done, the effect on the railway must be serious.

The prosperity of the Darjeeling Himalayan Railway is of some importance to the local Government. The following is an extract from a

note furnished to us by Mr. Kerr, Chief Engineer, Roads and Buildings :—

" In accordance with clause 16 of the agreement dated the 8th April 1879, in lieu of a fixed track rent for the use of the road, the net profits of the Railway in excess of 5 per cent upon the paid up capital of the Company is divisible in equal moieties between the two contracting parties. On moiety is a first charge towards repayment to the Secretary of State of the amount spent upon the upkeep and maintenance of so much of the cart road as carries the Railway, and balance remaining being credited to a Fund created in 1913 for the mutual improvement of the road and Railway and this balance is divided equally between the Railway and Government and must be spent on works approved of by both parties.

From the above it will be seen that if the motor traffic becomes so acute as to force the Railway into liquidation, Government would be faced with the whole cost of the maintenance of the road and lose about one lakh of rupees a year which at present is paid by the Railway towards the cost of upkeep of the road ; furthermore the cost of the upkeep of the road would be greatly increased since the road would then have to carry all the goods and passengers now carried by the Railway."

Mr. Gladstone, the representative of Messrs. Gillanders Arbuthnot & Co., informed us that, as soon as his company got the powers to do so, it was their intention to start on the road between Siliguri and Darjeeling a service of good class motor vehicles with the object of providing upper class transport facilities by road between these two points. We asked whether he thought it would be possible to compete with the existing motor services and he explained that he hoped to do so, as it was intended to co-operate with the Eastern Bengal Railway and secure passengers by providing convenient through booking facilities for passengers and their luggage between Sealdah and Darjeeling. Mr. Gladstone informed us that he considered the most important step to be taken to compete with the motor competition was to grant light railways permission to run motor services to whatever extent they considered necessary to protect their interests.

He also informed us that in the opinion of his Company the grant of licences to public carriers should be under the control of some kind of local committee who would consider the needs of the district to be served as regards transport ; whether existing facilities were adequate ; and whether the roads could bear the extra traffic involved by the issue of further licences.* His firm also consider that, in order to encourage motor feeder services to the railways, reduced licence fees might be issued to the proprietors of motor transport who would be prepared to operate such services. Mr. Gladstone suggested that the present motor services

* The suggestion of traffic control by local committees is analogous to the proposals for similar bodies, which have already been made to us in the Punjab and in the United Provinces.

should be regulated as regards fares, times of running, standard of upkeep, etc.

Messrs. McLeod & Co.—Mr. Godfrey, the representative of Messrs. McLeod & Co., informed us that motor competition had been most severely felt by them on the Kalighat-Falta Railway—a small 2′ 6″ gauge line, which serves the southern suburbs of Calcutta and runs for a great part of its length along the Calcutta-Diamond Harbour Road. The passenger earnings of this line have dropped from nearly Rs. 3 lakhs in the year 1925 to about Rs. 1½ lakhs in 1932. In 1925 the railway was running at a profit; since that year it has been running at a loss and during the year 1932 the subsidy paid on this account amounted to Rs. 52,000. Messrs. McLeod & Co. are of the opinion that eventually the establishment of some Ministry of Transport for India will be inevitable, but in the meantime they press for the adoption of suitable measures to regulate and control buses and lorries plying for hire and carrying parcels and goods. They make the same points as other railways in regard to the safety of public, the suitability of roads, and the regulation of fares, and they support Messrs. Gillanders Arbuthnot & Co. in recommending the formation of local committees for the purpose of controlling the issue of licences and generally regulating road traffic. They are also strongly of opinion that all railways should have the power to run bus or lorry services within their zone of influence under licenses granted, of course, under the direction of the local committees already referred to. Messrs. McLeod & Co. state that if the suggestions they make are carried out, they are confident that not only would bus competition with railways disappear, but that the bus owners and railways would be in a position to co-ordinate their services to the general improvement of the transport facilities throughout the country.

28. *Messrs. Martin & Co.*—Mr. Anderson, the representative of Messrs. Martin & Co., reported that motor bus competition was most seriously felt by the Baraset-Basirhat Railway managed by his firm. For the greater part of its length the line runs alongside a motorable road and a considerable number of licensed buses run over it. These buses are subject to little control as regards overloading, excessive speed, etc. The actual passenger earnings of the railway do not show on the whole such a spectacular decrease as is noticeable on other lines which have been affected by motor competition, but Mr. Anderson explained this by pointing out that efforts had been made to try and meet the motor competition by putting on extra trains, and he drew our attention to the fact that whereas in the year 1925-26 the profit per train mile was about Rs. 2·18, in the year 1931-32 it has fallen to about Rs. 0·70, the train miles steadily increasing during the intervening years. Messrs. Martin & Co. stress the point that while railways are not permitted to invade each other's sphere of influence, the invasion of a railway's territory is open to any individual who can buy a motor bus and that, whereas railways are strictly controlled by the Railway Board and its Inspectors, Police control over public motor vehicles is inadequate. Messrs. Martin

& Co. are of the opinion that the powers of the Railway Board should be extended to include the control of road traffic, or a separate Board should be created for this purpose; it being essential that public road services should be controlled to the same degree as are the railways.

The firm are also strongly of opinion that railways should be given full powers to run their own road services.

As regards road development, they also urge that expenditure should be incurred on those roads in localities where other methods of transport do not already exist, and to prevent overlapping road services should not be generally permitted alongside existing rail services.

29. *Conclusion.*—We shall deal more fully in the general part of our Report with the question of railways operating road motor transport, without the present restrictions, on parallel roads and we need only say here that permission to do this may be the only means of preventing some of the light railways from going out of business altogether. The principal of " zoning," or confining the radius of activity of motor transport to a certain milage, which is supported in many of the provinces we have visited, as being a reasonable means of checking undesirable motor competition with railways, would, in general, be of no assistance to the light railways which are usually short branches, in many cases not extending to 50 miles.

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION.

30. *Public Motor Vehicles Plying, and Taxation thereof.*—We were unable in the time at our disposal to obtain full particulars of the number of motor vehicles plying for hire in the Presidency, and in view of the very large number of these vehicles concentrated in Calcutta and its suburbs we doubt whether a total figure for the Presidency would be very instructive. Outside Calcutta the figures furnished to us were not complete but it appears that some 1,700 motor buses and lorries are engaged in the carriage of passengers and goods. The rates of fare charged by buses per passenger mile were stated to be normally between 6 and 9 pies, although rates as low as 4 pies per passenger mile and as high as 2 annas per passenger mile were quoted to us. The provincial tax is not very high, amounting to about Rs. 120 per annum for a 30 cwt. bus and there are moreover no additional local fees or imposts, all of these being merged in the provincial tax under the Bengal Motor Vehicles Taxation Act, 1930, as recently amended.

31. *Calcutta Branch* : *I. R. T. D. A.*—The Calcutta Branch of the Indian Roads and Transport Development Association kindly submitted to us a memorandum which we reproduce at Appendix 3, and discussed the same with us. Much of the matter contained in the memorandum and discussed with the Association is of a general nature and applicable to the whole of India and moreover exceeds the narrow limits of the matters dealt with in this particular chapter of our report, but we reproduce it not only for its general interest but also in order to draw attention to the analysis of the cost of running a 30 cwt. motor lorry or bus which is here stated to be annas 4·75 per mile.

32. *Motor Industries Association.*—We also had the benefit of a brief discussion with the representatives of the Motor Industries Association who made a representation to us in the form of a memorandum which we reproduce below :—

" The Motor Industries Association :—

1. Agrees with the principle of Co-ordination between road and rail to prevent wasteful competition provided that along routes where competition cannot be avoided the principle is accepted that long hauls belong to the railway and short hauls to the road.
2. Insists on a primary condition for co-ordination that the motor industry must be free from the vagaries of Central and Provincial taxation.
3. Urges that all forms of transport must be taxed in a proportionate degree.
4. Also that uniform taxation should apply throughout India.

5. Has no objection to reasonable restriction of vehicles on particular routes but opposes monopolies as being contrary to the best interests of the country. If in any places monopolies are found necessary, it should be a condition precedent that a railway or tram company should not also be granted a monopoly of motor transport.
6. Is in favour of the principle of minimum fares being established.
7. Urges that an enlarged Central Road Board approaching the status of a Ministry of Transport is almost a primary necessity so that the plans for co-ordination may proceed on properly organised lines."

33. *Effect of Taxation.*—We think that there is no doubt that the public service motor transport industry is suffering seriously from the general financial depression, aggravated to some extent by high taxation. Our impression is that not only is the industry hampered by and apprehensive of the results of high taxation but also that the disconnected and unrelated levying of taxes upon motor transport by different authorities independent of one or the other has created a feeling of uncertainty and discouragement which in no small measure tends to aggravate the effect upon the business of the total of these various taxes in the aggregate. It is true that in Bengal the provincial tax is not to be supplemented by local taxes but there remains the separate imposition of taxation by the Central and provincial Governments.

CHAPTER V.—INLAND WATERWAYS.

34. *Co-ordination of road development to meet the needs of River Navigation Companies.*—In para. 4 (c) of letter No. 4253, dated 24th June 1932, we were instructed during our visit to Bengal to get into touch with the River Steam Navigation Companies and to see to what extent the development of roads in the province could be directed to meet their needs. Accordingly, we arranged a meeting with Mr. G. W. Leeson, representative of Messrs. McNeil & Co., who are Agents of the River Steam Navigation Co., Ltd., and Mr. McDougall, representative of Messrs. Kilburn & Co., Managing Agents of the India General Navigation and Railway Co., Ltd., Mr. T. A. Curry, Superintending Engineer, Irrigation Department of the Bengal Government, also attended this meeting.

35. *Needs of the River Steam Navigation Companies.*—Both Mr. Leeson and Mr. McDougall stated that the feeder roads needed by their companies were chiefly situated in the provinces of Bihar and Orissa and Assam, and they promised to send us a list of feeder roads which the Steam Navigation Companies consider necessary in their interests in these provinces. These lists are dealt with in our report on the provinces concerned.

So far as Bengal was concerned, the representatives of the Steam Navigation Companies stated there was nothing that they required beyond a proposal put up by Mr. McDougall for metalling the road between Comilla and Chandpur. It was however pointed out to Mr. McDougall, that if money was spent to improve this road, the only effect would be to divert from the Assam Bengal Railway traffic which that line could easily carry to Chandpur, as the road would to a certain extent short circuit the railway.

36. *Comprehensive Road Development.*—As mentioned in Chapter VII we have ventured to suggest the desirability of having some comprehensive plan of road development in the province, and, when the framing of this is undertaken, we consider that the River Steam Navigation Companies should be consulted.

CHAPTER VI.—RAILWAY PROJECTS IN THE PROVINCE.

37. We have been asked to examine the railways projected in the province, and to state whether there are any cases where in our opinion a road might better serve the purpose than a branch line. We give brief particulars of branch lines which have been contemplated and state in connection with each whether we consider a road would better serve the purpose.

38. *East Indian Railway.*—The only project the East Indian Railway have in Bengal is a small link 4·64 miles in length on the 2′ 0″ gauge to connect Champadanga on the Howrah-Amta Light Railway with Tarakeswar on the Tarakeswar Branch of the East Indian Railway. This line would be for the interchange of traffic but the railway states that a metalled road would serve the purpose (*see* Appendix **5**).

39. *Bengal Nagpur Railway.*—The Bengal Nagpur Railway has three projects under contemplation in Bengal :—

(*a*) Contai Road-Contai, 34 miles, 5′ 6″ gauge.

(*b*) Chandrakona-Ghatal, 25 miles, 5′ 6″ gauge.

In both these cases a road exists, and, if it is improved, we are of opinion that, it will, at any rate for the time being, adequately serve the area.

(*c*) Vishnupur-Santragachi Chord, 76 miles, 5′ 6″ gauge. This project appears to us to be in a different category. Its object is to provide a shorter line from the Jharia coalfields to Bally Bridge, Calcutta, and if constructed it would presumably carry heavy coal traffic. Incidentally it would also open up an important area in the neighbourhood of Arambagh.

40. *Bengal Dooars Railway.*—While in Calcutta we had a meeting with the representatives of the Indian Tea Association, and they pointed out that the line projected by the Bengal Dooars railway between Madari Hat and Gitaldha—a distance of some 60 miles — was badly needed to open up a fertile area of country. For the greater part of its length this line would traverse the State of Cooch Bihar, but we may mention that in the opinion of the Chief Engineer, Roads and Buildings, Bengal Government, a road would not be sufficient to develop the country which the projected line would serve.

41. *Assam Bengal Railway.*—(*a*) Dohazari-Akyab, 182 miles, metre gauge. We have dealt with this project at some length in Chapter III, (para. 23) and need offer no further comments here.

(*b*) Gauripur (Mymensingh)-Gauhati, 264 miles, metre gauge.

This line runs partly through Bengal and partly through Assam. It is an important through connection, and an alternative route to the

hill section of the railway. Considerable traffic is anticipated and a road would not serve the purpose.

(*c*) Jharia-Jhanjail-Bagmara, 13 miles, metre gauge (with Bagmara-Siju extension in Assam, 32 miles, metre gauge).

These lines are intended to serve the coal fields at Dharangiri and the limestone quarries in the Garo Hills, and will deal with heavy mineral traffic which could not be carried by a road.

(*d*) Rajapur-Ramchandrapur—22 miles.
(*e*) Narsingdi-Aralia (Jinardi)—24·74 miles.
(*f*) Noyapara-Chatalpara—20 miles.
} Metre gauge.

It is expected that all these lines will carry heavy agricultural traffic, and a road would not serve the purpose.

(*g*) Mymensingh-Bhairab Bazar Railway Extensions :—

Sararchar-Hossainpur.
Atharabari-Hossainpur.
Kishoreganj-Hossainpur.
Atharabari-Goghbazar.
Kishoreganj-Karimganj.
Sararchar-Rasitpur.

These are all short lines which have been surveyed, but it is considered that roads would serve the areas adequately.

42. *Eastern Bengal Railway.*—The Eastern Bengal Railway furnished us with a statement of Railway projects which have been contemplated in the province by that Administration, but where for the most part the alignment proposed for the railway is already provided with a road. In some instances lengths of new roads are required to complete the road communication for the whole of the project; the total milage of such road construction for all the projects amounting to 58. If the road communications are completed, it is considered that they would adequately serve the needs of the area to be developed, at any rate, for some years to come, in the case of every projected line, except that proposed between Dacca and Aricha. We append a copy of the statement given us by the Eastern Bengal Railway as Appendix 4.

The proposed line between Dacca and Aricha will fulfil a special function, its purpose being to give quicker rail communication between Calcutta and Dacca *viâ* Goalundo. It will reduce the through journey to Dacca by several hours and we were given to understand by the local Government that it is a most important connection, which they desire to see completed. The project has been provisionally sanctioned and now awaits allotment of funds.

CHAPTER VII.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

43. *Desirability of comprehensive plan of road development.*—There is, for the purpose of our enquiry, no programme of future road development extant. There are schemes for the application of the Bengal share in the road development account and, to the extent to which certain of these are really parts of larger projects which cannot be completed within the scope or the period of the present account, their commencement may be said to mortgage future resources and, to some extent, to determine future plans. As an example we would refer to the commencement of Chittagong-Aracan Trunk Road, the completion of which, as a completely bridged and metalled road, would cost a very large sum of money, and upon which it is at present proposed to apply a sum of Rs. 5 lakhs from the road development account for certain important bridges at the Chittagong end. With these exceptions there is no comprehensive or general plan for future development, but at interviews which we had with the Hon'ble Finance Member, the Hon'ble Minister for Local Self-Government and certain officers of the local Government, the advantages of having some comprehensive plan upon which to work were discussed and generally accepted in principle. Such a plan indeed appears to be peculiarly necessary in the case of Bengal, because road embankments and bridges in many parts will be abnormally expensive, and because the effect of such embankments and bridges on the drainage and inundation of the country, which is of first rate importance in Bengal, has not, we believe, always been sufficiently studied in the past, and should be carefully considered before any further programme is undertaken. It is also evident that haphazard road development will for these reasons be more difficult eventually to knit together into a coherent whole, even where this is physically possible, than would be the case elsewhere.

44. *Peculiar aspects of road planning in Bengal.*—The topography and many waterways of Bengal appear to us to preclude the planning of an inter-connected road system for the whole Presidency. In certain areas the building of an inter-connected system is a possible ultimate objective; in others the waterways and existing railways must remain for many years, if not always, the sole channel of communication between neighbouring areas and road systems, and in such localities roads must be planned solely as feeders to waterways and railways. Elsewhere, the gradual evolution of a coherent system of good roads inter-connected by a trunk road or roads can be made the final aim of a rational plan, but it does not necessarily follow that, having drawn the plan, the trunk roads should first be constructed or that they should take the straightest and shortest routes. Desirable through communication can often be obtained by linking up a series of important local and feeder roads, it being left to posterity to provide the short-circuiting

chords and more direct connections, and, in working out a plan on these lines, we feel that in Bengal as elsewhere the actual order in which the various parts of the whole are taken up should be determined primarily by the principle of the greatest good to the greatest number and that the various parts should be developed to the highest standard where the actual traffic or that likely to result will be the highest. The application of such a principle will require a careful economic survey at a later stage, but a rough and ready method of assessment of the benefit resulting from any scheme can be applied by relating the proposed outlay to the number of persons likely to benefit thereby on the basis of the "catchment" area affected by the proposed road improvement and the density of population in that area. Whatever may be the eventual plan, we think that there can be no doubt that a plan is necessary and that it should take into consideration all requirements, whether for reconstruction of existing over-burdened roads or the provision of new through trunks or the improvement of local and railway feeders and even village links.

45. *Current road development.*—We have already referred to the schemes in progress or contemplated from the existing road development account. These consist to a large extent of the reconstruction or strengthening of existing metalled roads and we do not think that it will be necessary for us to discuss these at any great length. We have already, in para. 23, mentioned the case of the Chittagong-Aracan Trunk Road which appears to us to be a case in which public authority should decide whether in the general circumstances of Bengal and the particular circumstances of the area public funds should in the immediate future be expended upon the provision of both a railway and a parallel trunk road, and further that if the decision is that the provision of both cannot be justified, then that a decision should be made as to which of the two should be undertaken.

The improvements to, *e.g.*, the Calcutta-Diamond Harbour Road and the Calcutta-Jessore Road which have amounted almost to reconstruction have doubtless been the cause of substantial loss to certain light railway companies. It is natural that as funds are available there should be insistent demands for the improvement and development of the road system radiating round a city of the importance of Calcutta for quite considerable distances, and possibly the only objection which could be urged to a policy of large expenditure on such parallel facilities would be that the needs of other localities at present deprived of either good roads or railways, are not being met. To such an objection there can be no precise reply so long as there is no economic survey of the relative urgency of various requirements and plans and estimates for their provision, and we think that the drawing up of such a plan and the pooling of all available resources for its execution would go far to decide the justification for this or that scheme of development. Such a plan should definitely include as an important part the provision of feeder roads to railways and to inland waterways and we would remark that

the various railway administrations concerned, particularly the Eastern Bengal Railway, have for some years been asking for the improvement or provision of feeder roads which up to the present it has not been possible to provide, partly perhaps owing to the existing classification of roads within the Presidency and more recently because such schemes were not deemed to fall within the scope of the central road development account. We are convinced that the requirements of both the railways and the inland water transport companies should be considered as part and parcel of any comprehensive plan, because we suggest that at this stage the provision of these feeders, while small in detail, will entail in the aggregate an outlay far beyond the resources of local bodies and that therefore the only solution in the direction of more balanced development will be to pool all available resources to carry out a comprehensive plan of development.

46. *Feeder roads required by Railways.*—(i) *East Indian Railway.*—We give in Appendix 5 particulars of feeder roads which the East Indian Railway requires to be constructed or improved in Bengal. The East Indian Railway considers the question of feeder roads in the province of vital importance and the Divisional Superintendent of the Howrah Division states that there are instances of goods being carried much greater distances than the distance to the nearest station due to lack of communications. He also states there are cases where goods are going by routes other than the railway in spite of the wishes of the senders, owing to lack of feeder roads. The work required is chiefly improvement of existing tracks and metalling and the total length involved is about 315 miles.

(ii) *Bengal Nagpur Railway.*—Appendix 6 gives particulars of the feeder roads required by the Bengal Nagpur Railway. Only three are mentioned by the railway and these are all in the neighbourhood of Khargpur. The total milage involved is 10½ miles.

(iii) *Eastern Bengal Railway.*—The Eastern Bengal Railway has furnished us with very complete particulars of its requirements in regard to feeder roads. We give in Appendix 7 the feeder roads which, the railway states, are in need of repairs, and in Appendix 8 the feeder roads which require to be constructed. The total milage involved in the former is about 698 and in the latter about 110.

(iv) *Assam Bengal Railway.*—Appendix 9 gives a list of the feeder roads required by the Assam Bengal Railway in the province of Bengal. The approximate milage involved is about 66½.

We give these details as illustrating the nature and extent of the requirements, but we would emphasise that both railway and waterway feeder road requirements should be re-examined as part of a comprehensive survey.

CHAPTER VIII.—SUMMARY OF CONCLUSIONS.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

(1) As regards road communications, Bengal is peculiar owing to numerous waterways and periodical inundations. The province would be well served by communications as a whole, if railways (broad, metre and narrow gauge) and inland waterways were properly served by the general improvement of roads (paras. 5 and 10).

(2) Little has been done to improve unmetalled roads (para. 6).

(3) The distribution of metalled roads is uneven; the majority of roads are in charge of district boards (paras. 7 and 8).

(4) Metalled roads are said to be deteriorating (para. 11).

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

(5) The province is served by four major railways; East Indian, Bengal Nagpur, Eastern Bengal and Assam Bengal. There are two less important railways—the Bengal Dooars, and the Darjeeling Himalayan in the North, and several light railways in various parts of the province (para. 12).

A.—*East Indian Railway.*

(6) The East Indian Railway reports that motor competition is chiefly felt along the Grand Trunk road and, as far as can be ascertained, the railway is losing about Rs. 4½ lakhs annually in Bengal owing to this competition (paras. 13 and 14).

(7) The railway reports that the carriage of merchandise by motor transport is increasing, especially in the neighbourhood of Calcutta. No estimate of losses can be given, and a careful census of the traffic moving is required (paras. 15-17).

B.—*Bengal Nagpur Railway.*

(8) The railway reports a few competitive bus services in the neighbourhood of Calcutta and the loss due to these may be placed at about Rs. 85,000 (para. 18).

C.—*Eastern Bengal Railway.*

(9) The Eastern Bengal Railway complains that the present policy of the local Government in regard to road development is detrimental to the interests of the railway; and that money is being spent on roads likely to compete with the railway rather than on those which would feed it (para. 19).

(10) The railway reports bus competition in the neighbourhood of large towns served by it. The annual loss due to this competition may be placed at about Rs. 7 lakhs. The railway also reports loss of goods traffic due to the same cause, but no estimate has been given of this (paras. 20 and 21).

D.—*Assam Bengal Railway.*

(11) The railway reports that motor competition is so far on a small scale, possibly occasioning the railway a loss of about Rs. 31,000 annually (para. 22).

(12) The railway specially drew our attention to the controversy which has sprung up in connection with the proposed Chittagong-Arakan road which, if constructed, will become a serious competitor to the Chittagong-Akyab railway which the Assam Bengal Railway wish to construct as soon as funds are available. The local Government have decided to undertake the construction of the first part of this road (para. 23).

E.—*Light Railways.*

(13) Light railways are important from the public point of view as they are usually guaranteed (para. 24).

(14) At a general discussion held with the Managing Agents of the Bengal Light Railways a recent letter addressed by the light railways Managing Agents to the Chief Commissioner was examined, and the following points therein were dealt with :—

(1) The possibility of increasing speeds.

(2) The introduction of cheaper fares.

(3) The unfair burden of octroi and terminal taxes.

(4) The need for keeping a census of road borne traffic.

All the Managing Agents of light railways in Calcutta urged that light railways should be given permission to run motor services, that proper regulation should be extended to buses, and that traffic boards should be constituted to limit the number of motor vehicles plying over certain routes and generally to control motor transport (paras. 25-29).

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION.

(15) Outside Calcutta there are some 1,700 motor buses and lorries engaged in the carriage of passengers and goods. The fares quoted appear to be between 6 and 9 pies. The provincial tax amounts to about Rs. 120 per annum for a 30-cwt. bus (para. 30).

(16) Useful information was given us by the Calcutta branch of the Indian Roads and Transport Development Association, which is reproduced in Appendix 3 (para. 31).

(17) The Motor Industries Association were also interviewed and they gave us a short memorandum on points which they consider of importance. They urged the absolute necessity of a proper co-ordination of all taxation on motor transport, and the establishment of a central road board (para. 32).

(18) We think that the present lack of co-ordination of taxation must be detrimental to the development of motor transport (para. 33).

Chapter V.—Inland Waterways.

(19) In an interview of the representatives of the River Steam Navigation Company and the India General Navigation and Railway Company it was ascertained that nothing in the way of feeder roads was needed in the province, except the metalling of the road between Comilla and Chandpur, which work, if carried out, would affect the Assam Bengal Railway. If a comprehensive scheme for road development is framed, we consider that the River Steam Navigation Companies should be consulted (paras. 34-36).

Chapter VI.—Railway projects in the Presidency.

(20) The East Indian Railway has only one project under consideration in Bengal—a small link line forming a rail connection between Champadanga and Tarakeswar. A road would not serve the purpose (para. 38).

(21) The Bengal Nagpur Railway has three schemes :—

(*a*) Contai Road-Contai, 34 miles, 5′ 6″ gauge.

(*b*) Chandrakona-Ghatal, 25 miles, 5′ 6″ gauge.

(*c*) Vishnupur-Santragachi Chord, 76 miles, 5′ 6″ gauge.

In the case of (*a*) and (*b*) a road would serve the purpose ; (*c*) is a chord line carrying coal, and a road would not serve the purpose (para. 39).

(22) The Bengal Dooars Railway project between Madari Hat and Gitaldaha is urgently required. A road would not serve the purpose (para. 40).

Assam Bengal Railway.

(23) The following projected railways are expected to carry heavy traffic beyond the limits of a road :—

(i) Gauripur (Mymensingh)-Gauhati, 264 miles, metre gauge.

(ii) Jharia-Jhanjail-Bagmara, 13 miles, metre gauge.

(iii) Rajpur-Ramchandrapur, 22 miles, metre gauge.

(iv) Narsingdi-Aralia (Jinardi), 24·74 miles, metre gauge.

(v) Noyapara-Chatalpara, 20 miles, metre gauge.

It is considered that a road would serve the purpose of the following projected railways :—

(i) Mymensingh-Bhairab Bazar Railway Extensions.
(ii) Sararchar-Hossainpur.
(iii) Atharabari-Hossainpur.
(iv) Kishoreganj-Hossainpur.
(v) Atharabari-Goghbazar.
(vi) Kishoreganj-Karimganj.
(vii) Sararchar-Rasitpur.

(para. 41).

(24) The Eastern Bengal Railway has given us a list of railway projects in lieu of which pucca roads would serve the purpose. About 58 miles of road would be necessary. The only project which could not be replaced by a road is the Dacca-Aricha line which the local Government consider essential to quicken up communication between Calcutta and Dacca (para. 42).

Chapter VII.—Programme of future road development.

(25) There is for the purpose of our enquiry no comprehensive programme of future road development although the commencement of certain large schemes from the central road development account to a small extent predetermines the future use of available resources (para. 43).

(26) We feel that there are special reasons why a comprehensive plan for future development is desirable in Bengal (para. 44).

(27) While the improvement or reconstruction of important roads radiating round large cities and parallel with railways as schemes of works carried out from the central road development account has been criticised, we feel that, in the absence of any comprehensive plan it is impossible to say whether there might have been alternative avenues of expenditure more desirable from the point of view of the province as a whole, and we consider that a comprehensive plan should be drawn up in which the requirements in the matter of feeder roads of the various Railway Administrations to which we have referred should be taken into consideration (paras. 45, 46).

APPENDIX 1.

Particulars regarding communications in the area having a density of population of 100 per mile and over; that is excluding the Chittagong hill tracts (area 5,138 square miles, population 212,922). Calcutta (area 21 square miles, population 1,196,734) also excluded.

Area	71,684 square miles.
Population	48,704,346
Average density of population . . .	679 per sq. mile.

Roads and Railways.

	Length in miles.	Length per 100 sq. miles of area.	Area per mile of road or railway.	Persons per mile of road or railway.
Railways	3,450	4·81	20·78	14,117
Metalled roads	3,496	4·87	20·50	13,932
Unmetalled roads	36,228	..	..	..
Total all roads	39,724	55·40	1·80	1,226

Area more than 10 miles from any railway=29,020 square miles or 40 per cent. of total area with density 100 and over. There are 1,234 miles of railway and metalled road parallel and within ten miles of each other, that is 35 per cent. of the metalled road milage and 36 per cent. of the railway milage.

There are 2,030 miles of river steamer routes. The area more than 10 miles from any railway or river steamer route is 14,700 square miles or 20·92 per cent. of the whole area.

APPENDIX 2.

FROM—THE AGENTS AND MANAGING AGENTS OF BRANCH LINE RAILWAYS IN INDIA,

TO—THE CHIEF COMMISSIONER, RAILWAY BOARD, SIMLA, 12TH AUGUST 1932.

DEAR SIR,

Motor Competition with Railways.

We, the Agents and Managing Agents of Branch Line and Light Railways in India, are instructed by our Boards of Directors to represent to you the serious decline of traffic and decrease in earnings which has already occurred and is growing worse, and which, in our opinion, is to a considerable extent attributable to competition from motor vehicles plying on adjacent or short-circuiting roads. We are, of course, aware that the matter of road motor competition is one which is seriously engaging the attention of Railway Authorities not only in India but in the United Kingdom and elsewhere, but the loss of traffic on most Railways under our management has already attained considerable proportions and, in the interest of the Companies we represent, we desire to urge that action may be taken without further avoidable delay.

2. We must emphasise that motor competition affects Feeder or Branch Line Railways to a greater extent than the Main Lines. This is due to the former's short lead and slower speeds and to the fact that there is frequently in existence a parallel road to connect the towns for the benefit of whose trade the railway was originally built, to foster which capital was sunk in Feeder Railways before the days of other mechanical traction. The Main Lines are eventually affected also, but not probably to the same extent, since they have the advantage of their longer distance traffic. Government, we need hardly say, are especially interested in the welfare of the Branch Line Railways, as apart from the loss of confidence of the investing public in enterprises which have the backing of Government, they are also financially concerned with the amount of surplus profits they receive or the amount of rebate or guarantee which they may have to pay. We feel, therefore, that in urging the special interests of the Branch Line Railways on behalf of their respective Shareholders, we can justifiably mention the importance of the subject from the view point too of Government's financial interests.

3. In this connection, we attach a statement* of the results for the last few years of several of our Railways, which, we consider, illustrates this point. It will be seen that the numbers of passengers carried have decreased as much in some cases as 54 per cent. in the last 7 years. It will further be seen that in every instance Government have suffered a severe loss and in more than one case, the receipt by them of surplus profits has been turned into a payment of Rebate. The difference in every case is very considerable and the position, in spite of steps taken to arrest the falling off in traffic, tends to become worse.

4. It may be argued that the more recent fall in traffic is largely due to trade stagnation, but it will, we think, generally be considered beyond question that even recently this was not the sole reason, and that road motor competition, undoubtedly, is a factor with which Railways have seriously to reckon. We further submit that when the present trade stagnation shows some sign of abatement, the number of motors and lorries on the roads will tend to increase and it is therefore all the more important that Government should do whatever lies in their power to tackle this problem without delay, failing which, from the Railways' point of view, the position threatens further to deteriorate.

5. We have naturally approached before now the Main Line Administrations by whom our Railways are worked, urging the trial of various remedies, such as

* Pages 41 and 42 below.

the reduction of fares, speeding up of trains, more convenient services and the employment of more suitable types of locomotives or coaches. These have been adopted in each case as far as financial considerations permit but not with an appreciable improvement of the position. We consider that more might be done, and in addition to the remedies mentioned, would especially urge the following :—

(i) Increasing the speed limits on the narrow gauge and other Branch Line Railways and so permit of greater speeding up of trains. We believe this might be possible on many lines without a great improvement in their standard.

(ii) Endeavouring to make railway travel more attractive by means of even cheaper fares and the issue of week-end and reduced return tickets, etc., especially on certain fair days and holidays.

In this connection, we regret to notice a tendency to propose a policy of increasing third class fares, with the object of recovering part of the lost earnings. In our view such a policy is most undesirable and apart from the fact that we believe it will only make the position worse, it will undoubtedly prejudice the public in favour of motor competition.

(iii) Action to put a stop to the present differential treatment, which is experienced in several districts throughout India, of Octroi and Town Duty being imposed by Local bodies on rail-borne merchandise and not upon similar merchandise conveyed by road. Local bodies should be given the option of levying these duties on all merchandise entering their limits equally, or abolishing them altogether.

(iv) Devising some means of keeping a census of road borne traffic, in order to determine more accurately than is possible at present the extent of the fall of railway earnings due to motor competition.

6. The question of the development of communications generally in India enters largely into the subject and whilst it cannot be denied, even by those who are directly connected with Railways, that improved road communications must play an important part in the future prosperity of the country, under existing conditions and where roads run more or less parallel to railways, the latter have, we submit, in certain respects to face what might be termed "unfair" competition. For instance, Railways conform to the strict Rules and Regulations embodied in the Indian Railways Act in regard to the comfort and safe transport of passengers, and maintain their rolling stock and permanent way up to a high state of efficiency. On the other hand, the laws dealing with the safety and comfort of passengers by road are sometimes difficult to enforce and it is, in our opinion, essential that there should be a very much more effective control over the running of motor vehicles than appears to obtain at present. Railways are not allowed to give preferential treatment to one trader against another, whereas, as has been found in the United Kingdom, motor buses and lorries "charge what they like, accept and refuse what traffic they like, operate over any road and at any time they like without regard to regularity of service. They choose the cream of the traffic leaving the rest to the Railways." Railways have further to bear all expenses of permanent way, track formation, have in many cases to contribute to the cost of roads and bridges used by their competitors, and have to bear the cost of numerous staff, signal arrangements, etc. Without going into the vexed question as to whether motors contribute a just proportion to the maintenance and cost of roads and traffic control we would submit that if they now claim to be public carriers they must expect to be saddled with some of the burdens and control which such a position entails.

7. We quite recognise that both Railways and roads serve the country's and public's interests and are desirable in the development of the country, and whilst there is no doubt that certain undeveloped areas require opening up and that motors might accomplish this in certain districts where it would not be possible or remunerative to construct a railway we consider it is very desirable that the

interests of railways and especially short feeder railways, should be kept clearly before Government so that road development should proceed on rational and not on competitive lines, that is to say attention should principally be directed to the maintenance and development of such roads only as would act as feeders to existing Branch Line and other railways. A policy of earmarking funds for this object could not be construed as favouring railways unduly, as those routes on which competition exists have already a duplicated system, so that the public interest will be served best by attention to those places which are still in need of communications. The lack of policy which appears to exist at present in this respect is, we believe, due to the fact that whereas Railways are a central subject, roads are under Provincial and Local Governments whose revenues are not affected by the loss of railway traffic. We are, of course, aware, that Government are very much alive to the position as it exists to-day and we would suggest that it can only be bettered by the appointment of a Member under the Central Government to be in charge of all forms of transport with a view to the co-ordination of all types of communications, *viz.* :—Railways, Roads, Water and Air.

8. In conclusion, we would most strongly urge that, with a view to tackle the immediate question as to the most economic regulation of traffic as between Rail and Road, a strong departmental or other Committee should be appointed to make an exhaustive enquiry into the whole position. The results of a change in road policy would take a considerable period to bear fruit, and the most important matter to take up now is to endeavour to evolve some means of improving the present position and preventing further deterioration.

9. We desire that we may have an early opportunity of having a discussion with you on this important subject, and shall be very much obliged if you will be so good as to appoint a time in the next few weeks when it may be convenient for you to grant an interview to representatives from our Firms and from the Boards of the companies which we represent.

We shall be obliged if the Railway Board will reply to the Office of Messrs. Killick, Nixon and Company, Bombay.

Yours faithfully,

Managing Agents, The Khulna-Bagirhaut Railway Co., Ltd.
Managing Agents, The Larkana-Jacobabad (Sind) Light Railways Co., Ltd.
The Upper Sind Light Railways, Jacobabad.
Kashmore Feeder Co., Ltd.
The Sind Light Railways, Ltd.

Agents, The Darjeeling Himalayan Railway Co., Ltd.
Managing Agents, The Darjeeling Himalayan Railway Extensions Co., Ltd.
The Hoshiarpur-Doab Branch Railways Co., Ltd.
The Hardwar-Dehra Branch Railway Co., Ltd.
The Mymensingh Bhairab Bazar Railways Co., Ltd.
The Sara Sirajganj Railway Co., Ltd.
Raipur Forest Tramway.

Managing Agents, The Mayurbhanj Railway Co., Ltd.
Agents, The Ahmedabad Prantej Railway Co., Ltd.
The Tapti Valley Railway Co., Ltd.
The Amritsar Patti Railway Co., Ltd.
The Central Provinces Railways Co., Ltd.
The Guzerat Railways Co., Ltd.
The Mandra Bhon Railway Co., Ltd.
The Sialkot Narowal Railway Co., Ltd.

Managing Agents, The Howrah-Amta Light Railway Co., Ltd.
The Howrah-Sheakhala Light Railway Co., Ltd.
The Baraset-Basirhat Light Railway Co., Ltd.
The Bukhtiarpur-Bihar Light Railway Co., Ltd.
The Futwah-Islampur Light Railway Co., Ltd.
The Arrah-Sasaram Light Railway Co., Ltd.
The Shahdara (Delhi)—Saharanpur Light Railway Co., Ltd.

Managing Agents, The Burdwan-Katwa Railway Co., Ltd.
The Ahmadpur-Katwa Railway Co., Ltd.
The Bankura-Damoodar River Railway Co., Ltd.
The Kalighat-Falta Railway Co., Ltd.
The Katakal Lalabazar Railway Co., Ltd.

Managing Agent, The Jhenidah Railway Syndicate, Ltd.
Agents, The Dhond Baramati Railway Co., Ltd.
The Pachora Jamnar Railway Co., Ltd.

Managing Agents, The Dehri-Rohtas Light Railway Co., Ltd.
For the East India Distilleries and Sugar Factories, Ltd., K.P.M. Light Railway.
PARRY & CO., LTD.
Managing Agents.

	1		2		3		4		5	
	Passengers.		Passengers.		Passengers.		Passengers.		Passengers.	
	No	Earnings.	No.	Earnings.	No.	Earnings.	No.	Earnings.	No.	Earnings.
1925	8,37,034	3,30,157	16,08,467	8,85,202	22,89,915	8,72,003	5,21,494	2,01,253	4,19,095	2,60,427
1926	9,29,288	3,29,779	14,50,788	7,63,998	24.51,784	8,96,231	5,10,496	1,96,379	4,70,292	2,94,912
1927	8,11,176	2,88,814	11,51,174	5,96,776	22,50,586	8,11,446	4,65,250	1,86,244	4,50,747	2,97,912
1928	7,24,207	2,47,460	9,78,573	5,07,756	20,67,447	8,20,423	4,81,540	1,94,287	4,07,531	2,65,325
1929	7,43,232	2,45,708	11,53,204	5,10,427	19,40,918	7,71,047	4,45,578	1,73,172	5,13,550	2,53,315
1930	7,03,868	2,28,589	11,33,680	4,89,981	19,16,138	6,91,685	5,51,840	1,62,853	6,76,387	2,48,766
1931	7,00,114	1,90,990	7,33,509	3,22,587	16,82,914	6,28,775	3,94,044	1,45,824	5,51,344	2,25,895

	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Surplus Profits.	Total Gross Earnings.	Rebate.	Total Gross Earnings.	Rebate or Surplus Profits.
1925	6,30,404	7,646	17,45,598	2,35,864	10,84,589	1,97,064	2,64,063	***6,193**	6,11,564	658
1926	6,17,711	***68,340**	14,90,668	1,63,470	10,58,216	1,88,615	2,54,207	***12,175**	6,25,284	2,832
1927	5,54,238	***1,14,748**	12.87,332	1,01,380	9,83,602	1,66,937	2,57,622	***9,417**	6,37,161	4,350
1928	5,64,034	***88,269**	12,54,412	91,963	9,76,645	1,65,817	2,49,698	***13,604**	6,03,793	***11,841**
1929	6,07,923	***67,590**	13,65,861	1,36,416	9,07,287	1,55,635	2,25,592	***20,982**	5,98,378	***4,164**
1930	5,10,715	***1,45,938**	15.09,041	1,75,088	8,06,857	1,26,444	2.21,357	***26,506**	5,77,308	***12,539**
1931	4,30,461	***2,41,931**	12,32,389	98,962	7,79,402	1,18,643	1,90,726	***42,863**	5,00,627	***52,267**
For ½ year ended 30-9-31	..	..	2,29,538	***1,11,600**	..	..	..	..	..	..

* Heavy figures indicate " Rebate ".

	6		7		8		9	
	Passengers.		Passengers.		Passengers.		Passengers.	
	No.	Earnings.	No.	Earnings.	No.	Earnings.	No.	Earnings.
1925	22,34,438	6,89,627	..	..	3,03,676	1,34,656	8,12,070	2,84,462
1926	21,85,430	6,92,240	1,84,819	97,499	2,74,804	1,16,392	7,25,165	2,27,261
1927	22,28,265	6,15,250	1,84,274	82,851	2,30,801	95,969	8,58,247	1,91,331
1928	17,93,156	5,50,541	1,78,455	71,152	1,66,678	69,416	8,85,988	2,21,059
1929	16,68,959	5,32,335	1,66,591	62,651	1,14,799	42,449	9,14,758	2,27,706
1930	17,40,173	5,16,217	1,57,157	59,090	1,31,782	46,859	8,91,224	1,97,642
1931	12,78,264	4,02,292	1,46,989	31,949	90,898	34,480	8,61,953	1,73,783

	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.	Total Gross Earnings.	Rebate or Surplus Profits.
1925	8,32,097	44,572	..	..	2,02,680	13,529	3,55,673	16,017
1926	8,26,634	39,971	1,50,344	32,924	1,60,592	*2,854	2,86,402	*39,498
1927	8,15,916	36,737	1,42,408	28,898	1,41,239	*16,391	2,42,696	*81,851
1928	6,69,851	*9,743	1,22,576	8,255	1,16,815	*30,525	2,88,490	*44,405
1929	6,49,944	*5,111	1,12,411	149	1,02,371	*35,866	3,13,758	*9,974
1930	6,36,705	*16,694	1,07,997	*12,431	1,06,907	*33,974	2,86,248	*59,832
1931	5,42,341	*48,439	73,794	*20,984	86,731	*48,203	2,46,721	*93,499
For ½ year ended 30-9-31	..	..	..	..	..	..	..	..

* Heavy figures indicate " Rebate ".

APPENDIX 3.

Memorandum by the Calcutta Branch of the Indian Roads and Transport Development Association.

Road and Rail co-ordination.

The Calcutta Branch of the Indian Roads and Transport Development Association has made a study of questions relating to the rivalry between road and rail, with particular reference to the position in Bengal, and the manner in which it might be possible to co-ordinate the working of road transport and railways to the best interests of the public.

Before proceeding to deal with local problems it is pertinent to make some reference to the comparisons we have been induced to make with conditions elsewhere. This has seemed desirable in view of the fact that failure to introduce some measure of regulation in the matter of road and rail transport development in certain countries has already had far-reaching effects, while in this country the position has not yet got out of hand. In consequence India is, or should be, able to derive benefit from the study of the mistakes of others and put her house in order while yet there is time.

A considerable degree of prominence has of late been accorded to the position of English railways, whose disappointing results have brought about a spectacular fall in the values of railway securities. There have been those who without hesitation have averred that competition from motor transport is entirely responsible for this; but fair minded investigators have for some time realised that such competition is but one of many contributory factors, more important ones being the world-wide economic depression and the capital structures of the English railways. Nevertheless motor transport has undoubtedly hit very hard indeed at the earnings of railways wherever the two have come into conflict, and a state of affairs has been brought about in England where a very uneconomical form of competition is conferring benefits on none but an insignificant section of the community. It is gratifying to note that Sir Arthur Salter's Committee of Inquiry has been able to put forward recommendations that apparently offer fair treatment to both road and rail interests and are acceptable to all.

In Bengal, as far as can be determined, the rivalry between road and rail has not yet extended appreciably beyond competition for short distance passenger traffic. Goods haulage by motor transport has made relatively little progress outside the towns due largely to the paucity of good road systems and to competition from the bullock cart and water transport. There is, too, at least one instance on record of restrictions having been imposed by the Provincial Government on goods haulage by motor transport operating on a parallel route to a railway. The absence of suitable bridges to support safely heavy goods traffic is another impediment to progress of mechanical road haulage. It seems hardly possible that goods haulage by road will interfere appreciably with railway earnings for some time to come. It has to be remarked however, that the same factors that prevent mechanical transport from making in roads on railway freight earnings in Bengal also deprive the railways of opportunities of taking advantage of the collective and dispersive functions of motor transport in under-developed areas.

As instances of the restrictions on motor transport freight traffic in the environs of Calcutta itself, it is noteworthy that over the Bally Khal Bridge on the 7th mile of the Grand Trunk Road, leading out of Calcutta on the West side of the Hooghly, traffic is restricted to 5 tons; and over the Barrackpore Bridge across the Circular Canal on the Barrackpore Road, leading out of Calcutta to the north, traffic is limited to 4 tons. Both these bridges are, moreover, so narrow as to result in a degree of congestion entirely out of keeping with modern traffic requirements on arterial roads forming important approaches to a city of Calcutta's standing.

Light railways and branch railways are the biggest sufferers from motor transport competition. In many instances light railways are really only a form of tramway running on or alongside age-old suburban or inter-town roads. Their range is comparatively short usually well within what may be termed the economic operating radius of motor transport, which is assessed variously at from 50 to 100 miles—and in consequence the motor bus by virtue of its greater speed and flexibility and the absence of control over fares charged, has been able to rob the light railways of traffic along parallel routes. Many of the motor buses employed are driven, operated and lived in by the owner and members of his family, who are content to make the merest livelihood out of the business in cases where competition from other buses or railways is severe. The very slender margins on which some buses have been operating is evidenced by the numbers that have been withdrawn since the putting into effect of the new Bengal Motor Vehicles Tax Act.

In connection with Branch Line traffic of the larger railways the position seems to be much the same as with light railways in cases where parallel roads exist. Here, however, it has seemed to this Association that more might be done in the direction of deflecting motor traffic from competitive services to feeder services by the adoption of a road construction policy of the right sort. The alignment of branch lines in some parts of Bengal—and not only branch lines for that matter —is often such as to encourage chord motor bus services that offer more convenience and speed than the railway. To take a case very close at hand, the branch railway from Sealdah, Calcutta, to Budge Budge follows a circuitous route around the outskirts of Calcutta and thence along the river, skirting many of the villages whose sole communication with the railway is *viâ* kutcha roads and tracks, some of these of appreciable lengths. The main road, however, which goes through all the villages, is now an asphalt surfaced road with a thriving bus service. Other instances occur throughout the province of Bengal.

The above cursory review of the situation, as it appears to the Calcutta Branch of this Association, points to the setting up of the preliminaries to a state of affairs that is going to bring much distress to railways and, ultimately, to the public if measures are not taken in time to regulate matters. There seem to be two courses open: one is to adopt the procedure that has to some extent been tried without much success in certain countries where, as is the case here, railways are a state monopoly—that of imposing restrictions on the development of motor transport to an extent that tends to deprive the public of the benefits of the most economical form of transport: the other course is the one advocated by this Association—that of co-ordinating both systems so as to make them complementary to each other, and by so doing to eliminate useless competition and uneconomical operation on both sides.

The first step in this direction is the setting up of a controlling body whose functions would relate to all forms of communications. The deputation from the Council of the Association during its discussions with the Government of India in July last made clear the Association's views in connection with the constitution of such a body and it is not therefore proposed to dilate on the matter here.

The next point of importance seems to us to be the formulation of a policy of extensive road development in the direction of feeder roads in areas where communications do not at present exist. The Calcutta Branch is engaged on an examination of this aspect of road development in Bengal but our investigations have not as yet extended very far, and we are not in a position at present to do more than make passing reference to one or two instances of the kind we feel would with advantage stand consideration.

One typical instance in Bengal is the district of Nadia in the vicinity of Meherpur. There is wide-voiced agitation amongst the residents of this region arising from the decision of the Bengal Road Board to construct a road from Krishnagar to Lalgola Ghat. The course of this road would run parallel to both the existing railway lines and the steamer route between the two places. The village com-

munities in the centre of Nadia district are urging that the road should take a course that would pass through Meherpur and Jalangi, in order that they may be put into communication with the railway at Krishnagar on the one hand and at Lalgola on the other. It is claimed that the area that could with advantage utilise such a road is important agriculturally and capable of great development if provided with communications.

Another case in which the assistance of this Association has been sought is in connection with a feeder road to serve the Howrah-Amta Light Railway at Munshirabad, Howrah District. In this case a road does exist, but it is metalled for a portion of its length only, and the area of operation of motor transport services centred on Munshirabad is therefore restricted. It has been pointed out that the absence of suitable feeder roads results in much of the traffic having to take a circuitous steamer route to find railhead.

Other representations have been made to us from many other parts of Bengal and Bihar and Orissa, all telling much the same story, and showing a desire on the part of rural communities to have roads to facilitate transporting themselves and their produce to railhead.

Feeder roads in general would be District Board roads, and at the present time not only are funds lacking for new construction, but it is a common complaint that satisfactory maintenance is beyond the means of many of the local authorities. This being the case, the outlook is rather hopeless unless some new policy of financing road maintenance and development is adopted. As direct application of the yield from taxation on motor transport is obviously going to fail to meet the country's needs—disregarding for the moment the fact that in several instances (*e.g.*, in Bihar and Orissa) the portion of the Petrol Tax specifically earmarked for roads has been deflected to general revenue to balance budgets—it would appear that money must be obtained by other means. The course recommended by this Association is to issue Road Loans or Road Bonds, the interest and redemption charges on which would be met and guaranteed by the Petrol Tax, and this would make available sufficient capital to allow of embarking in a comprehensive programme of feeder road construction that could not help but be of benefit to railways and road users alike.

COST OF RUNNING A 30-CWT. MOFUSSIL TYPE LORRY OR BUS.

Annual Standing Charges.

	Rs.
Licenses—	
Registration Fee	32
Provincial Tax	125
Insurance—	
Vehicle, goods, workmen's compensation if any, etc.	250
Depreciation: (Average 40 months)—	
On life of bus or lorry, say over 3 years for bus and 5 for lorry less cost of tyres	1,200
Wages—	
Driver, cleaner or conductor	800
Establishment charges	360
Garage rent	120
Interest on capital, say 6 per cent.	240
Total standing charges per annum	3,127

Assuming 20,000 miles per annum.

Running Charges.

	Rs.
Petrol in gallons at Re. 1-6	1,500
Oil and Grease	150
Tyres	800
Repair charges	200
Spare parts	160
Total running cost	2,810
Add total standing charges	3,127
TOTAL	5,937

Divided by total number of miles 20,000 operated per annum—cost per mile in annas 4·75.

PARTICULARS OF COST FOR RUNNING A BUS.

Inclusive working costs.

Single Decker	0-5·6 per vehicle mile.
Double „	0-10-0 „ „ „

Run 120 miles per bus day, say 12 hours.

Single Decker.

	Rs.	
Actual running costs of 24 seater bus	32	per day.
Capital Charges, costs of 24 seater bus	9-8	„ „

Double Decker.

Actual running costs of 50 seater	45	per day.
Capital Charges, costs of 50 seater	11-8	„ „

Single deckers earn now just the working cost only.
Double deckers earn now just Rs. 5 or Rs. 6 over.

APPENDIX 4. (*Vide* Para. 42.)

Eastern Bengal Railway.—Statement showing feeder roads along alignments where Branch Lines were not likely to be built for a few years.

Name of the Project.	From	To	Distance—Miles.	Class of Road.	Civil District.
Berhampore to Halsa. Estimated cost for the whole length of 103 miles from Santhia to Halsa Rs. 2,18,00,000. Anticipated return 3½ per cent.	Berhampore R. S.	Narainpur	5	1st class	Murshidabad.
	Narainpur	2 miles below Madhupur.	11	New Road required	Do.
	2 miles below Madhupur.	Patakabari	5	2nd class road	Do.
	Patakabari	Jitpur	8	New Road required	Murshidabad and Nadia.
	Jitpur	Meharpur	5	2nd class road	Nadia.
	Meharpur	Boalia	15	3rd class road	Do.
	Boalia	Halsa R. S.	8	New Road required	Do.
			57		
Ishurdi-Pabna-Bera Railway. Estimated cost Rs. 44,00,000. Mileage 48. Anticipated return 5 per cent.	Ishurdi R. S.	2 miles beyond Pabna	18	2nd class	Pabna.
	2 miles beyond Pabna	Shujanagar	14	3rd class	Do.
	Shujanagar	Dulai	6	New Road required	Do.
	Dulai	Bera	10	3rd class	Do.
			48		
Krishnagar-Jellingee. Estimated cost Rs. 44,00,000. Mileage 56. Anticipated return 3·6 per cent. Project deferred till Santhia-Halsa is constructed.	Krishnagar R. S.	Meharpur	28	3rd class	Nadia.
	Meharpur	East side of Karimpur at 44 miles.	16	2nd class	Do.
	Karimpur, Mile 44	Jellingee	11	3rd class	Nadia and Murshidabad.
			55		
Faridpur-Barisal Railway Extension. Estimated cost Rs. 40,00,000. Mileage 81. Anticipated return 2·5 per cent.	Faridpur	Bhanga	20	2nd class	Faridpur.
	Bhanga	Madaripur	23	New Road required	Do.
	Madaripur	Barisal	30	2nd class	Faridpur and Bakerganj.
			73		

Statement showing feeder roads along alignments where Branch Lines were not likely to be built for a few years—contd.

Name of the Project.	From	To	Distance—Miles.	Class of Road.	Civil District.
Jamalpur to Tangail. Estimated cost Rs. 50,00,000. Mileage 47. Anticipated return between 5 and 6 per cent. Deferred till Dacca-Aricha is constructed.	Bausi R. S.	Gopalpur	20	2nd class	....
	Gopalpur	Kalihati	16	3rd class	....
	Nalihati	Tangail	14	2nd class	....
			50		
Singia to Bhatiapara. Capital cost Rs. 23,80,000. Mileage 18. Anticipated return 6·02 per cent.	Singia R. S.	Narail	10	New Road required	Jessore.
	Narail	Bhatiapara	13	3rd class	Do.
			23		
Bogra-Nowkhila	Bogra	Nowkhila	16	2nd class	Bogra.
Serajganj-Kajipur. Estimated cost Rs. 38,00,000. Mileage 42.	Serajganj	Bogra	5	2nd class	Pabna,
	Bogra	Kajipur	11	3rd class	Do.
			16		
Ruhea-Titulia. Estimated cost Rs. 12,00,000. Mileage 21.	Ruhea	Atwari	10	2nd class	Dinajpur, Purnea and Jalpaiguri.
	Atwari	Titulia	14	3rd class	....
			24		
Dacca-Aricha. Estimated cost Rs. 2,03,17,000. Mileage 64. Anticipated return 4·15 per cent.	Sanctioned provisionally awaiting allotment of funds.				

APPENDIX 5. (*Vide* Para. 46(*i*).)

East Indian Railway.—Railway Feeder Roads required by the East Indian Railway to be constructed or improved.

Serial No.	District.	From	To	Length—Miles.	Relevant remarks.	Authority at present responsible for maintenance.
1	Hooghly . . .	Chandanpur . .	Bhandarhati. . .	6	New road required mainly to open out new areas. Will probably result in the introduction of bus service, and development of traffic in sand, paddy and potatoes.	
2	Ditto . . .	Haripal . . .	Ditto . . .	6	Bus services at present in operation but the condition of the road is far from satisfactory, particularly during the monsoons, resulting in the passengers missing connecting trains at Haripal.	District Board.
3	Ditto . . .	Ditto . . .	Dhaniakhali . .	3¾	This road is unmetalled and requires at least 8 ft. metalling, same as between Haripal and Bhandarhati. Dhaniakhali is an important mart and the metalling of road will lead to the extension of bus service between Haripal and Dhaniakhali.	District Board.
4	Ditto . . .	Tarakeswar . .	Champadanga . .	5¼	Almost impassable during rainy season, and should be properly bridged and drained throughout. Both pilgrim and goods traffic will improve (especially jute, paddy and potatoes). The construction of this road may be considered as an alternative to the proposed light railway between the two points.	District Board.
5	Ditto . . .	Hooghly . . .	Satgaon *vid* Kazidanga .	4	Only one mile is metalled. The remaining portion requires metalling. Satgaon is an important trade centre and the improvement of this road will open out this area and develop traffic in paddy and jute.	District Board.

APPENDIX 5—*contd.*

Railway Feeder Roads required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length—Miles.	Relevant remarks.	Authority at present responsible for maintenance.
6	Hooghly . . .	Hooghly . . .	Manjan . . .	18¾	Only 3 miles are metalled and the balance requires metalling.. Bridges over Saraswati and the Kunti Khal require repairing.	District Board.
7	Ditto . . .	Chandernagore . .	Bhola	12	Only 2 miles are metalled. The remaining 10 miles require metalling and one timbered culvert to be replaced by an arched bridge.	District Board.
8	Ditto . . .	Magra	Polba	5½	Polba is an important thana. The present metalled road requires to be widened to a uniform width of 14 ft. and certain bridges strengthened.	District Board.
9	Ditto . . .	Bhadreswar . . .	Nasibpore . . .	6	This road requires to be fully drained and bridged. A feeder bus service can be introduced with advantage.	District Board
10	Ditto . . .	Singur	Dirghanu . . .	6¾	The bridges and culverts require improving. Singur is an important thana and if the interior is connected, paddy, jute and vegetables traffic will improve.	District Board.
11	Ditto . . .	Boinchee . . .	Bilsara . . .	3½	The metalling of this road is necessary in view of the importance of Boinchee station, which is an important rice centre. The traffic in paddy will develop with improved facilities.	District Board.
12	Ditto . . .	Tarakeswar . . .	Nischendipore . .	4½	These roads require metalling. Traffic in paddy, straw, potatoes (outward) and coal and miscellaneous merchandise (inward) will increase. Also passenger traffic.	District Board.
13	Ditto . . .	Ditto . . .	Jearrah . . .	2		
14	Ditto . . .	Gurup . . .	Chopa	4	This road requires metalling. There will be increase of paddy, potatoes, jute, straw and perishable traffic. There will also be an increase of passenger	

						traffic by the inauguration of bus services.	
15	Ditto . . .	Chandanpur . . .	Babnan . . .	6½	Traffic in jute, paddy, potatoes, straw, sand (outward), coal and miscellaneous merchandise (inward) and passenger traffic will increase.		District Board.
16	Ditto . . .	Chandanpur . .	Kolachara . . .	3	Traffic in jute, paddy, potatoes, straw, sand (outward), coal and miscellaneous merchandise (inward) and passenger traffic will increase.		District Board.
17	Ditto . . .	Somra . . .	Dingra . . .	3	Bridges and culverts require improvement. Increased despatches of paddy, jagree and rice will result, and daily passenger traffic between Somra and Howrah will increase.		District Board
18	Ditto . . .	Ditto . . .	Inchura . . .	3			
19	Ditto . . .	Ditto . . .	Dumurdaha . . .	10			
20	Burdwan . . .	Panagar . . .	Damodar river . .	3	The section of the road from Silampore is in very bad condition and traffic is at standstill for six months in a year. Paddy traffic to Rice Mills will increase.		District Board.
21	Ditto . . .	Burdwan . . .	Jehanabad . . .	25	The condition of the road is very bad.		Provincial Government.
22	Ditto . . .	Talit	Jagadabad . . .	9½	The road should be metalled. For six months in a year the traffic is suspended. If the road is metalled it will improve both the inward and outward traffic of Talit.		Local Board.
23	Ditto . . .	Khana Junction . .	Sanko village . .	6	Should be extended up to river Damodar. There is at present a foot-path only. A metalled road is necessary. During six months in a year all traffic is suspended. This feeder road will improve the traffic of Khana Junction.		Local Board.
24	Ditto . . .	Memari . . .	Satgachia Kuslopur .	1	Unmetalled at present and should be metalled. With the improvement of these roads traffic in jute, paddy, straw and potatoes will improve.		District Board.
25	Ditto . . .	Ditto . . .	Sridharpore . .	1½			
26	Ditto . . .	Ditto . . .	Radhakantapur . .	1			
27	Ditto . . .	Saktigarh . . .	Burdwan-Kalna Road .	2	Impassable during rainy season. If the road is metalled an increase in despatches of paddy and straw is expected.		District Board.
28	Ditto . . .	Saktigarh (Grand Trunk Road).	Damodar River . .	1½	Ditto		District Board.

APPENDIX 5—*concld.*

Railway Feeder Roads required by the East Indian Railway to be constructed or improved—concld.

Serial No.	District.	From	To	Length—Miles.	Relevant remarks.	Authority at present responsible for maintenance.
29	Burdwan . . .	Palsit (from Grand Trunk Road).	Burdwan-Kalna Road .	5	The road is unmetalled and is impassable during rains. If the road is metalled an increase in paddy and straw traffic is expected from Rasulpur and Saktigarh.	District Board.
30	Ditto . . .	Mankar (Grand Trunk Road).	Kasba village . .	4		
31	Ditto . . .	Khana Jn. (Grand Trunk Road).	Mohanpore . . .	2		
32	Ditto . . .	Panagar (Grand Trunk Road).	Sonai	2	Impassable during rains. If improved, increased traffic in paddy and straw is expected.	Local Board.
33	Ditto . .	Ditto . .	Shyamsundarpur .	4		
34	Ditto . .	Panagar (Station Feeder Road).	Saldanga . . .	4		
35	Ditto . . .	Purbasthali . .	Manteswar . . .	14	This will be a good feeder road . .	District Board.
36	Ditto . . .	Patuli	Chatni . . .	3	Metalled up to Chatni only. It will be a good feeder road.	District Board.
37	Ditto . . .	Samudragarh . .	Nadanghat . . .	4¾	Nadanghat is an important place of trade and should be connected with Samudragarh.	
38	Birbhum . . .	Bolpur . . .	Kujaripara . . .	5	Kutcha roads, impassable during rains. If improved an increase in despatches in paddy, etc., is expected.	Local Board.
39	Ditto . . .	Ditto . . .	Sijan	8		
40	Ditto . . .	Sainthia . . .	Bongram . . .	3	Ditto	Local Board.
41	Ditto . . .	Ditto . . .	Kundula . . .	3		

42	Birbhum and Murshidabad.	Chatra (East) . .	Jangipore Road . .	14	The present kutcha road is impassable in rains and if it is improved and extended an increase in despatches of paddy, etc., can be expected.	District Board
43	Ditto . .	Chatra (West) . .	Sultanpur . . .	10	Ditto.	
44	Ditto . .	Murarai (East) . .	Paikar . . .	7	This road requires connecting up with Daluka, Amrapara and Moheshpore. Impassable in rains. If improved and extended it will result increased despatches of paddy.	District Board
45	Ditto . .	Murarai (West) . .	Maheshpore . . .	7	Part pucca and kutcha. Links up with Amrapara, Sultanpur and Dumka and should be improved.	District Board.
46	Ditto . .	Jlambazar . .	Bolpur . . .	12	This road is metalled but not in proper condition. Retards free movement of Feeder bus services.	District Board.
47	Ditto . .	Rampur-Hat (East) .	Bataspore (Buswan) .	6	There is a pucca road for 3 miles and if the road is improved and extended it will increase despatches in paddy.	District Board.
48	Birbhum . . .	Ditto . .	Hasan . . .	6	Ditto.	
49	Murshidabad . .	Nabadwip . . .	Chandpur . . .	3	The construction of this road will place Nabadwip in connection with the Jahanagan-Samudragarh road and the Samudragarh-Nadanghat road. The latter two roads should be metalled.	District Board.
50	Ditto . . .	Khangra Ghat Road .	Kandi	16	This is an important feeder road connecting Behrampore with its Sub-Division at Kandi. Metalled for 12 miles only. Goods traffic is at standstill during monsoons. There are 16 buses in operation on this road but in monsoons the pile bridge over the river Dwarka at mile 13 is demolished and the service is suspended.	District Board
51	Ditto . . .	Chourigacha . .	Ditto . . .	8	It is a fair weather road only. It should be metalled which will greatly improve the traffic of Chourigacha station.	District Board

APPENDIX 6. (*Vide* Para. 46(*ii*).)

Feeder roads required by the Bengal Nagpur Railway.

Station.	Railway Comml. Distt.	Civil District.	District Board.	Proposed road facilities.				Milege.
				No. of roads to be built.	Nature of roads to be built.	Names of villages (Trade centres) proposed to be connected with stations.	Reasons for construction of the roads.	
Birshibpur . .	Khargpur .	Howrah .	Ulubaria .	1	Cart track .	To connect the station with the main metalled road—about 1 mile to the south of the station.	Development and increase of traffic (in general).	1 mile.
Bakhrabad . .	Do. .	Midnapur .	Midnapur .	1	Metalled .	To join the main metalled road to the east of the station.	Development of the station.	¼ ,,
Dantan . . .	Do. .	Do. .	Do. .	1	Do. .	To link up Mankapur with the station, through Sarasanko, Arbona and Janakpur.	Appreciable development and increase of betel leaf traffic.	9 miles. An unmetalled road (3 miles long) exists up to Sarasanko, a betel leaf market, but it is very unsuitable for traffic during the rains.
								10¼ miles.

APPENDIX 7. [*Vide* Para. 46 (*iii*).)

List of Feeder Roads which the Eastern Bengal Railway suggest should be improved.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	REMARKS.
			Miles.			
Sara	Railway Stn. .	Dhagunj . .	6	Pabna . .	Kutcha . .	The condition of the road is very bad during the rains.
Paksey	Paksey . .	Pabna . .	16	Do. . .	Portion metalled	This road crosses numerous water-ways which require to be bridged.
Gopalpur . . .	Gopalpur . .	Wallia . .	3	Rajshahi . .	Partly pucca .	The road is metalled for about ½ a mile from the station, but it stands in need of repairs.
	Do. . .	Lalpur . .	3½	Do. . .	Pucca . .	For the present it can be used by the carts. The road continues on to Bilmaria about 7 miles off. The road becomes very bad during rains. It requires repairs.
Abdulpur . . .	Abdulpur . .	Lalpur . .	7	Do. . .	Kutcha . .	The road requires repairs.
	Do. . .	Walia . .	6	Do. . .	Do. . .	The road is not in a good condition.
	Do. . .	Galimpur . .	5	Do. . .	Do. . .	Do. do.
Raninagar . . .	Raninagar .	Abathpur . .	4	Do. . .	Do. . .	
Nandangachi . . .	Nandangachi .	Puthia . .	4½	Do. . .	Do. . .	The road is not in a good condition.
Sarda Road . . .	Sarda Road .	Chargnat . .	3	Do. . .	Do. . .	Do. do.
	Do. . .	Tahirpur . .	13	Do. . .	Do. . .	Do. do
Rajshahi . . .	Rajshahi . .	Bagmara . .	20	Do. . .	Do. . .	The condition of the road is bad.
	Do. . .	Damkura . .	10	Do. . .	Do. . .	Do. do.
Amnura . . .	Amnura .	Tonar . .	12	Rajshahi and Malda.	Do. . .	The road gets very bad during the rains. Tonar is situated in the Rajshahi District but Amnura is in Malda District.

APPENDIX 7—*contd.*

List of Feeder Roads which the Eastern Bengal Railway suggest should be improved—contd.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	REMARKS.
			Miles.			
Santahar . . .	Santahar . .	Naogaon . .	3	Bogra . .	Metalled . .	The improvement of this road to motorable standard will develop goods and passenger traffic to and from the station. Sometimes before the War there was a proposal to construct a Railway line from Santahar through Naogaon to Rohanpur in the Malda District. Recently, however, the question of establishing an Out-Agency at Naogaon has been looked into.
Jamalganj . .	Jamalganj .	Gobar Chappa .	3½	Do. . .	Kutcha . .	Requires urgent repairs.
Kurmitolla . . .	Kurmitolla .	Manickdi . .	¾	Dacca . .	Do. . .	Improvement of this road will develop the area in vicinity.
	Kurmitolla Station	Sahara . .	½	Do. . .	Do. . .	Do. do.
Rajendrapur . . .	Rajendrapur .	Kapasia . .	7	Do. . .	Do. . .	These are two of the oldest roads in the District. The condition of these roads is reported to be bad, but if improved, these will develop the surrounding areas. Kapasia is on the Lakshyia river and a ferry connects it with the place on the other side of the river.
	Do. .	Mirzapur . .	9	Do. . .	Do. . .	
Sripur	Sripur . .	Motajuri . .	14½	Do. . .	Do. . .	One of the oldest roads, but not in a very bad condition.
Moshakhali . . .	Moshakhali .	Satara Bari .	3	Mymensingh .	Do. . .	The road needs repairs.
	Do. .	Mukhi Bazar	5	Do. .	Do. . .	Do.
	Mukhi Bazar .	Bhaluka . .	7	Do. .	Do. . .	The improvement of this road will develop the surrounding area.
Moshakhali . . .	Moshakhali .	Beronia Bazar .	4	Do. .	Do . .	The road needs repairs.
	Beronia Bazar .	Ponashal . .	2	Do. .	Do. . .	Do.

Gafargaon . . .	Gafargaon . .	Hushenpur .	8	Do. .	Do. . .	Hushenpur is an important place. The road requires improvement.
Dhalla	Dhalla . .	Shibganj Bazar .	10	Do. .	Do. . .	The road is very bad during rains. Bridges required.
Ramamritaganj . .	Ramamritaganj .	Nandail . .	12	Do. .	Do. . .	Bridges required in several places.
Kalirbazar . . .	Kalirbazar . .	Porabari *vid* Trishal.	12	Do. .	Do. . .	Some bridges are required to be built. For the present the road may be improved up to Ballar.
Baiganbari . . .	Baiganbari .	Muktagacha .	4	Do. . .	Metalled . .	Though the road is metalled, it is in a bad condition. The bridges are dilapidated. One bridge has been recently repaired. There are three more bridges to be repaired. The road continues as a kutcha road as an alternative route to Tangail through Madhupur and Kalihati.
	Do. .	Bahadurpur .	8	Do. . .	Kutcha . .	This road is always in a bad condition and requires annual repairs. If metalled, the traffic that is at present going by river may be diverted to this station. The road proceeds on to Phulpore and from there to Haluaghat, where it terminates.
	Do .	Montolla	2	Do .	Do. . .	The road is not in a good condition and requires repairs. This road when improved will facilitate the passengers of the neighbouring villages, Mirzapur, Kesmat, Kalyanpur, Montolla, Kumargate, etc.
Bidyaganj . . .	Bidyaganj . .	Muktagacha .	3½	Do. .	Do. . .	Requires metalling.
Piyarpur . . .	Piyarpur . .	Chandhara . .	8½	Do. .	Do. . .	Improvement of this road will develop traffic from Asthadar, Garduar, etc.
Nandina . . .	Nandina Bazar .	Jainsarigarh .	8	Do. .	Do. . .	Some bridges are required to be built.
Durmut . . .	Tallola Ghat .	Alai Ghat . .	5	Do. .	Do. . .	The road is too low and requires raising as some parts remain under water during rains.
Kendua-Kalibari . .	Kendua Kalibari	Dikpait . .	7	Do. .	Do. . .	The road is in a bad condition and needs repairs.
Sarisabari . . .	Jalapara Bazar .	Station Goods Shed.	¼	Do. .	Do. . .	The road is not in a good condition. It needs repairs and should be made pucca.
Bira	Biral . . .	District Board Road.	½	Dinajpur . .	Do. . .	Some places require raising for convenience of passenger traffic.

APPENDIX 7—*contd.*

List of Feeder Roads which the Eastern Bengal Railway suggest should be improved—contd.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	Remarks.
			Miles.			
Chirirbander	Chirirbander	Binnakuri	6	Dinajpur	Kutcha	If metalled, it can be used throughout the year and will be used for motor traffic. Metalling, widening, raising and bridging is expected to increase both passenger and goods traffic, *e.g.* jute and paddy.
Ruhea	Station	Aluakhan Mela site and Laheria Hat.	5	Do.	Do.	For cart and motors to operate on this road, thorough repairs with a culvert are necessary.
Akhanagar	Akhanagar	Lahirihat	8	Do.	Do.	Requires ordinary earth work to facilitate traffic. It can be used throughout the year.
Mohendranagar	Mohendranagar	Hiramanik	2½	Rangpur	Do.	Requires widening and raising. A bridge on the Bara Tista between Hiramanik and Khuniagachhi is also required. About 25 to 30 thousand mds. of tobacco traffic is being diverted *vid* Tista River from Harinchara to Bhairab (A. B. Ry.) by boat and from there by rail to Chittagong and Feni to Rangoon. Nearly half the traffic may be expected from Hiramanik and Khuniagachhi.
Mogalhat	Mogalhat	Durgapur Sitaihat	11	Do.	Do	Requires raising. This road extends up to Kakina, a station on the B. D. Ry. and at a distance of 12 miles from Sitaihat. The position of the road from Durgapur to Mogalhat is very bad and consequently 4,000 mds. of jute and tobacco is diverted by boat from Durgapur to Sitaihat every year. All this traffic is expected to be received.
Gitaldah	Gitaldah	Fulbari	8	Do.	Do	Earth work and dressing are required.
Anandnagar	Anandnagar	Topamahupur	2½	Do	Metalled	Requires to be repaired.
Chaudhurani	Chaudhurani	Jalalganj	4	Do.	Kutcha	Requires bridges for motor traffic. May be used at all times if bridges are constructed.

	Do.	Jamalhat	2½	Do.	Do.	One culvert ¼ mile off from Chaudhurani requires widening to drain away rain water which blocks Railway traffic generally during jute season.
	Do.	Bolahat	5	Do.	Do.	Bridging required for motor cars to ply all the year round.
Naldanga	Naldanga Station	Rahamatpur *viâ* Naldanga Bazar.	3	Do.	Do.	To be repaired and one bridge is required.
	Do.	Hatia village	2	Do.	Do.	To be repaired.
	Do.	Chhatrail	2	Do.	Do.	To be repaired. Some culverts to be bridged.
	Do.	Madarganj	10	Do.	Do.	To be repaired.
Kamarpara	Kamarpara.	Kamarjani	10	Do.	Do.	Requires raising and metalling in some places. About 4 culverts to be bridged. Increase of traffic, both inward and outward, is expected. Some repairs made by District Board last year but improperly done.
	Do.	Sadullapur	3	Do.	Do.	Some places require raising and widening. Some increase of traffic is expected.
Trimohini	Trimohini	Sadullapur *viâ* Tulsighat.	9	Do.	Do.	Requires some repairs about one mile from Trimohini.
Mahimaganj	Mahimaganj	Ghoraghat	22	Do.	Do.	On the existing road from Kamdia to Rampura. Some culverts are required to be made pucca. The road from Ghoraghat to Rampura requires widening and raising for the facility of the traffic. The Bogda firm is situated on this road and is expected to manufacture sugar shortly. The existing road from Jirai to Goods Shed requires raising to be accessible during rainy season. At present the roads from Kamdia and Ghoraghat to Rampura are difficult to be used in a rainy season. With thorough repair it can be used throughout the year.
Alipur Duar	Alipur Duar	Samukotla Hat	12	Jalpaiguri	Metalled	Railway portion of the feeder road requires metalling.
Jainti	Station	Rydak River	10	Do.	Do.	A bridge on the Rydak River needs to be constructed for traffic to be carried throughout the year.
Kalchini	District Board Road.	Railway Godown.	528 feet	Do.	Kutcha	Requires to be repaired.

List of Feeder Roads which the Eastern Bengal Railway suggest should be improved—contd.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	Remarks.
			Miles.			
Hasimara . . .	Alipur Duar .	Jaigaon . .	30	Jalpaiguri . .	Kutcha . .	Requires to be repaired.
	Hasimara . .	Enadarhat . .	6	Do. .	Metalled and Kutcha.	A bridge over Torsi River necessary to have traffic during all the year round.
Sonatala . . .	Sonatala . .	Jumarbari . .	6	Bogra . .	Kutcha . .	Requires thorough repairs and bridging where necessary so as to enable the carts to pass throughout the year. Increase to Jute Traffic expected.
	Do. . .	Makamtola .	10	Do. . .	Do. . .	Requires thorough repairs and bridging where necessary. To be used by carts throughout the year. Increase of Jute Traffic is expected.
Harishchandrapur . .	Harishchandrapur	Tuloihat . .	5½	Malda . .	Do. . .	Requires thorough repairs, in order to make the banks high to prevent over-flooding. Jute, seeds and grains expected to increase.
	Do. .	Meahat . .	..	Do. . .	Do. . .	Requires to be raised to permit of its being used throughout the year. Impassable during rainy season when all the traffic is diverted by boats. Expected to increase traffic.
Samsi	Samsi . .	Ratua . .	8½	Do. . .	Do. . .	To be used throughout the year. It should be raised above flood level. Bridges and culverts to be constructed. Expected to increase traffic.
	Do. . .	Palghat *vid* Bhagarampur.	7	Do. . .	Do. . .	To be raised. Bridges and culverts to be constructed. Traffic may increase.
Ezlakhi .	Balarampur .	Sigirhat . .	5	Do. .	Do. . .	Expected to capture tobacco, mango, rice and paddy traffic from boats which carry it to Malda Out Agency for I. G. N. & Co. It can be used throughout the year if the road is repaired thoroughly.

	Kargachi . .	Eklakhi Station .	1	Do. . .	Do. . .	Can be used throughout the year if the road is repaired thoroughly.
Nemaserai . . .	Station . .	English Bazar, Malda.	3	Do. . .	Do. . .	Ordinary repairs necessary to facilitate traffic.
Rohanpur . .	Rohanpur . .	Rajshahi Bazar *vid* Rohanpur Bazar.	50	Do. . .	Do. . .	Canal between Rohanpur Bazar and Station to be bridged.
Nachaul . . .	Dinajpur . .	Gopalpur . .	100	Do. . .	Do. . .	If metalled motor car traffic will continue throughout the year.
Godagari . . .	Level crossing Godagari.	3rd line Godagari	500 feet	Rajshahi . .	Do. . .	Requires to be repaired.
Munshiganj . . .	Station . .	Nabagange .	9	Nadia . .	Do. . .	This road should be metalled.
Kumarkhali . . .	Kumarkhali .	Dayarampur .	3	Do. . .	Do. . .	This road should be metalled for improvement of traffic coming into the big cloth market at Kumarkhali.
Bhairamara . . .	Bhairamara .	Sikarpur . .	16	Do	Do. . .	This road should be improved. Only one mile of the road is pucca. There are two rivers across the road.
Muragachha . .	Muragachha .	Dharmadaha .	2	Do.	Do. . .	This is an existing Kutcha Road. It connects Muragachha with Kanchkuli and Dharmadaha which are at a distance of 1 mile and 2 miles respectively from Muragachha station. It should be metalled, as in the rains the road is rendered impassable for cart traffic. The traffic is diverted *vid* the Dharmadaha and Goor Ghooria Khals by boats to Bhagirathi and by steamer to Calcutta. The leading inhabitants of Dharmadaha and Kanchkuli say that the District Board of Nadia would undertake the metalling of the road if railway would bear 10 per cent. of the cost. This road passes through Muragachha village. Population of Muragachha is 5,000 and that of Dharmadaha is also 5,000. This road should be improved to capture traffic now diverted to E. I. Ry. (Purbasthali Station).
Mochpara . . .	Station . .	Sanagram on the Ganges.	7	Faridpur . .	Do. . .	This road should be improved to capture traffic now diverted by steamers and boats.
Do. .	Coal siding .	Main Road .	600 feet	Do. .	Pucca . .	The low level cart road now in existence from the coal siding is under water during the rainy months. A separate road should be made connecting the coal siding with the main road.
Khankhanapur . .	Khankhanapur .	Rohimpur . .	3	Do. . .	Kutcha .	Half a mile of this road should be pucca from Khankhanapur Hat to Goods Shed in Ghat Siding.

APPENDIX 7- *concld.*

List of Feeder Roads which the Eastern Bengal Railway suggest should be improved—concld.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	Remarks.
			Miles.			
Sargachi . . .	Sargachi . .	Chaitnapur .	5	Murshidabad .	Kutcha . .	This road should be improved as it is an important feeder road.
Lalgola Flag . . .	Lalgola Flag .	Bazar Road .	320 feet	Do. .	Do. . .	This is an approach road already in existence but it is kutcha. It should be pucca to secure traffic and to help carts to come easily to the Railway Goods Shed.
Beldanga . . .	Railway Approach Road.	Bazar . .	1	Do. .	Do. . .	This is an important feeder road. The existing road becomes impassable during the rains.
Kanchrapara . . .	Kanchrapara .	Kanchrapara Bazar.	11	24-Parganas .	Do. . .	The village Bazar is about 11 miles from Kanchrapara and about 5 miles from MPJ. There is a kutcha District Board unmetalled road from MPI to Birohi and Birohi to Buxar is about a mile kutcha Local Board road—another road from Kanchrapara to Jn. of Jaguli village is pucca and from there to Birohi the route is part of Calcutta-Berhampore Road kutcha District Board Road (taken up by the road development committee for metalling) as most of the villagers are poor also cultivators: there is very little change of improving the traffic and if the road is made pucca it may be an advantage for Motor Bus Service.
Duttapukur . . .	Station . .	Jessore Road .	1¼	Do. .	Do. . .	This kutcha road from the station should be metalled. This feeder road has not been metalled but coal ashes have been put on the track.
Garia	Do. . .	Garia . .	⅝	Do. .	Kutcha and Pucca.	½ mile completed. ⅛ mile not completed.
Chandpara . . .	Do. . .	Jhaitdanga .	3	Jessore . .	Kutcha . .	The feeder road is from the Railway station. it passes through a village called Fulserali. This road is partially bridged and drained and is not metalled.
Bongaon . . .	Do. . .	Gorapotar . .	6	Do. . .	Do. . .	Not yet wholly completed and it should be done.

APPENDIX 8. (*Vide* Para. 46(*iii*).)

List of Feeder Roads which the Eastern Bengal Railway suggest should be constructed.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	REMARKS.
			Miles.			
Basudebpur . . .	Basudebpur .	Baralai River bank.	1	Rajshahi . .	Kutcha . .	The construction of this road will induce passengers and goods traffic to the Railway station.
	Do. .	Tanjal River bank	2	Do. . .	Do. . .	Do. do. do.
Madhanagar . . .	Madhanagar .	Brahmapur .	2	Do. . .	Pucca . .	In the first instance the road up to Brahmpur may be constructed and then extended to Tahirpur, a place about 7 miles off from the railway station.
Raninagar . . .	Raninagar . .	Trimohini River .	2	Do. . .	Kutcha . .	
Sitlai	Sitlai . .	Near Damkura .	2	Do. . .	Pucca . .	This will connect Sitlai with the District Board Road from Damkura.
Lalitnagar . . .	Lalitnagar . .	Kaligunj . .	11	Do. . .	Do. . .	The construction of this road will develop an unserved area.
	Do. .	Near Gobindpur .	1	Do. . .	Do. . .	This will connect the station with the District Board road.
Panchbibi . . .	Panchbibi . .	Bandarkardi .	3	Bogra . .	Kutcha . .	Completed, but it requires to be extended and joined to Hill-Chora Ghat feeder road.
Fatulla	Fatulla Station .	Steamer Station .	½	Dacca . .	Do. . .	This will connect Dacca-Narayanganj District Board Road. It is required for the Passenger Traffic.
	Jalkuri *vid* Pilkuni	. .	3	Do. . .	Do. . .	Do. do. do.
Kurmitolla . . .	Kurmitolla .	Bishil . .	3½	Do . .	Do. . .	Feeder road for jute traffic. This will develop an unserved area.
	Do. .	Khil Khit . .	1	Do. . .	Do. . .	Do. do. do.

APPENDIX 8—*contd.*

List of Feeder Roads which the Eastern Bengal Railway suggest should be constructed—contd.

Name of the Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	Remarks.
			Miles.			
Dhirasram . . .	Dhirasram . .	Jaghar . .	1½	Dacca . .	Kutcha . .	Feeder road required for jute and fish traffic. This will develop the neighbouring area.
	Do. . .	Bharaul . .	1	Do. . .	Do. . .	Do. do. do.
Rajendrapur . . .	Station . .	Kutchery Road .	600 feet	Do. . .	Do. . .	Feeder road for passenger traffic.
Kaoraid . . .	Kaoraid . .	Naindan . .	4	Do. . .	Do. . .	Feeder road required for passenger traffic.
	Do. . .	Baldighat Bazar .	5	Do. . .	Do. . .	Do. do.
Dhalla	Dhalla . .	Diwanganj Bazar	6	Mymensingh .	Do. . .	Road required for developing jute traffic.
Ramamritaganj . .	Ramamritaganj .	Rampur . .	8	Do. .	Do. . .	The road should be extended up to Trishal Bazar a distance of about 4 miles.
Senbari	Senbari . .	Jilki Ferry Ghat .	½	Do. .	Do. . .	Feeder road for passenger traffic.
Piyarpur . . .	Chandrakona .	Nakla . .	5	Do. .	Do. . .	Chandrakona is about 4 miles from Piyarpur on the Sherpur road. Nakla stands on the Maltabari road. Between Chandrakona and Nakla, there is a track which gets flooded during the rains and if elevated and broadened, it will develop Naltabari traffic.
Piyarpur . . .	Piyarpur . .	Kashir Bazar .	2	Do. .	Do. . .	The road is required to develop an unserved area.
Narundi . . .	Narundi Bazar .	Chandrakona .	3	Do. .	Do. . .	Feeder road for jute traffic.
Bansi	Bansi . .	Syamganj . .	5	Do. .	Do. . .	The road is required for jute traffic.
Bangalbari . . .	Hautabad . .	Fakirganjhat .	9	Dinajpur . .	Do. . .	Is expected to increase the traffic to the extent of 7,000 mds. monthly by opening up Fakirganj Hat an important trade centre for rice, paddy, onion and peas. At present the traffic is carried by country boats to other places.

	Bangalbari . .	Kanoorhat . .	5	Do. . .	Do. . .	To secure rice and paddy traffic.
Trimohin . .	Trimohini . .	Boali . .	3	Rangpur . .	Do. . .	To open up village Boali. Expected to secure fish traffic.
Bharatkhali . . .	Bharatkhali .	Rangpur District Board Road.	½	Do. . .	Do. . .	Expected to secure 50 per cent. more passenger traffic.
	Mile 16 of GBH Local Board Road.	Mile 12 of Rangpur, District Board Road.	1¼	Do. . .	Do. . .	Expected to secure 20 per cent. more goods and passenger traffic from Kamaijam and several large villages on the left bank of Chagat river.
	Bharatkhali Station Road.	Padamsaha. .	2	Do . .	Do. . .	To open up Padamsaha, a big village. 20 per cent. more goods and passenger traffic to be secured.
Sorbhog . .	Rampur village .	Manas River .	8	Kamrup . .	Do. . .	The road terminates with half a mile off of the Rampur village. Should be extended to the village itself.
	Sorbhog (Goods APP. Road).	Rampur Village .	80 yds.	Do. . .	Do. . .	One culvert will be required. Will directly connect the road from the Manas river with the Goods Shed.
Madhukhali . . .	Madhukhali .	Nawapara . .	4	Faridpur . .	Pucca . .	There is big granary at Nawapara South east of Railway station, and the construction of a road will help the development of Madhukhali Jn.
Agarpara . . .	Agarpara . .	Tarapukur .	1	24-Parganas .	Kutcha . .	The Pirtola authorities have decided to set a daily bazar at the Pirtola compound. The proposed road may be extended and joined with the Tarapukur Road. This will be convenient for the travelling public of Tarapukur village.
Singia	Basundhya .	Bagerpara . .	6	Jessore . .	Do. . .	A project has been made for the road but it has not been constructed yet.

APPENDIX 9. (*Vide* Para. 46(*iv*).)

Feeder roads required by the Assam Bengal Railway in Bengal.

		Mileage.
Chittagong—Nazirhat Railway .	(1) Hathazari or Mazirhat to Raozan . . .	8 miles.
Chittagong—Dohazari Railway .	(2) Kanchannagar to Anwara .	8 „
	(3) Banshkali to Satkania .	10 „
Noakhali Branch . . .	(4) Battali to Kachua . .	8 „
	Chaumuhani to Rasidpur .	9½ „
	Chaumuhani to Mahmedpur	8 „
Mymensigh—Bhairab Bazar Railway.	(5) Sararchar to Bajitpur .	3½ „
	(6) Kishoreganj to Karimganj	8 „
	(7) Dhoom Station to Santirhat *vid* Mahazan's Hat .	1,320 yards
Chittagong—Nazirhat Railway .	(8) Sankarhat to join Local Board Road . . .	3,080 „
	(Pathway widened to new road)	880 „
	(9) Sholashahar to Local Board Road requires metalling .	715 „
		66·43 miles.
	say	66½ miles.

4. UNITED PROVINCES.

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UNITED PROVINCES.

CHAPTER I.—BRIEF ITINERARY.

1. *Officers deputed to assist us in the United Provinces.*—The Government of the United Provinces nominated Mr. E. H. Cornelius, Deputy Chief Engineer, Public Works Department, to assist us during our investigation of road conditions in the Provinces; and the East Indian Railway arranged for Mr. J. C. Rose, Deputy Chief Commercial Manager, Rates and Development, to accompany us over the East Indian Railway.

2. *Places visited and persons interviewed.*—(*a*) *Government of the United Provinces.*—During our tour of the United Provinces we travelled 162 miles by road and 945 miles by rail. We visited Naini Tal and discussed our terms of reference with the following officers of the Government:—

Mr. H. A. Lane, I.C.S., Joint Secretary to the Government, Public Works Department.

„ P. A. L. Cantin, Chief Engineer, Public Works Department.

„ E. H. Cornelius, Deputy Chief Engineer, Public Works Department.

While we were at Naini Tal, H. E. the Governor kindly granted us an interview and discussed with us the objects of our enquiry.

(*b*) *District Head Quarters.*—We visited the following District Head Quarters in the Provinces and interviewed the Collectors, Deputy Commissioners and other officers as shown below:—

Capt. G. Sheriff, I.C.S., Collector, Moradabad.

Mr. G. B. Harper, I.C.S., Collector, Lucknow.

„ J. V. Lynch, U. P. Civil Service, Additional Magistrate, Cawnpore.

„ A. C. Hobart, I.C.S., Commissioner, Gorakhpur.

„ Murari Lal, P. A. to Collector, Gorakhpur.

„ L. Owen, I.C.S., Collector, Benares.

„ J. C. Donaldson, I.C.S., Collector, Allahabad.

At Cawnpore we met Rai Bahadur Vikramajit Singh, Chairman of the Municipality, and at the other District Head Quarters we were usually given the opportunity of discussing matters with the Chairman and Executive Officers of the District Board. We also had an interview with Mr. C. A. Anderson, Superintendent of Police, Lucknow, and

Mr. M. B. Hatfield, Executive Engineer, Benares, who accompanied us during our inspection of roads in the neighbourhood of that city.

(c) *Railway Officers.*—We visited the following Divisional Head Quarters of the East Indian Railway and interviewed at each the Divisional Superintendents and other officers.

	Divisional Superintendent.
Moradabad	Mr. L. E. Vining,
Lucknow	Mr. W. H. H. Young,
Allahabad	Mr. R. E. Rutherford.

We proceeded by road from Benares to Moghalsarai and Mr. Davis, Station Superintendent at that junction furnished us with information with regard to motor services running in competition with the railway in the neighbourhood.

At Gorakhpur we were the guests of Mr. J. Williamson, Agent of the Bengal and North Western Railway and from him and his Traffic Superintendent, Mr. Westwood, we were able to collect information as regards motor competition so far as it is affecting that railway.

(d) *Other persons interviewed.*—During our tour of the United Provinces we also accorded interviews to certain members of the public interested in the questions we are investigating. Among these were:

Seth Amba Prasad, Proprietor of Bus Services in three of the Western Districts of the United Provinces.

Mr. G. J. M. Hamilton, Representative of the Royal Insurance Company, Allahabad.

Mr. Saila Nath Mukerji, Chairman of the United Provinces Motors Ltd., Allahabad, Agents to the Chevrolet and Fiat Companies.

3. We take this opportunity of expressing our thanks to all the above for the ready help they have given us in assembling the facts and figures which form the basis of our Report.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

4. *General.*—The area of the United Provinces is 106,800 square miles and the population according to the 1931 census is 48,408,763. There are 3,132 miles of broad gauge railways, 1,728 miles of metre gauge and 92 miles of narrow gauge, a total of 4,952 miles ; the various railways serving the province being the East Indian, Bengal and North Western, Great Indian Peninsula, Bombay, Baroda and Central India, North Western and Rohilkund and Kumaon. There are 7,776 miles of metalled or hard surfaced roads of which 3,146 miles are provincial and 4,630 miles are local. *i.e.*, in charge of district boards. There are also 27,600 miles of unmetalled roads, some 600 miles of these being provincial and 27,000 miles local. In general unmetalled roads are unimproved and not motorable. Of the metalled or hard surfaced mileage 32 miles are of cement concrete, 48 miles are of bituminous or asphaltic concrete or macadam and 370 miles are water bound macadam surface treated with bitumen. The balance of 7,326 miles is of water bound macadam, some 800 miles being of stone and the rest of kankar. The general condition of the latter is said to be bad and to be further deteriorating for want of funds for maintenance.

5. *Improved unmetalled roads.*—Some five or six years ago a commencement was made with a scheme for the general improvement of unmetalled roads in district board charge, by the use of earth road grading plant, and some progress was made. There were, however, certain difficulties in the way of the extended use of novel machinery of this kind by district board agencies, and some doubts as to the efficacy of improved earth roads, which retarded progress. In particular the occurrence of lengths of sand, and the damage done to such roads by bullock carts, which necessitates regular maintenance and attention, have been further deterrents. More recently the general inadequacy of revenues to meet existing commitments has effectively prevented any such new development.

6. *Classification of roads in the province.*—Extra municipal roads fall into two classes (*a*) Provincial, maintained by the Public Works Department out of provincial revenues and (*b*) District Board, maintained by district boards from their own resources supplemented by certain general purpose grants from provincial revenues. From time to time in recent years certain district board roads have been transferred to the provincial class, on the recommendation of the Board of Communications, by reason of the general importance of, or intensity of traffic on, the road in question. This process has been arrested by the present financial stringency and several roads recommended for transfer have not so far been transferred. The Board of Communications has been temporarily suspended as a measure of economy.

7. *Expenditure on roads.*—The expenditure on roads of all classes or a period of years ending with the year 1926-27 was given in State

ment F at page 99 of the report of the Indian Road Development Committee. The expenditure in subsequent years has been as follows :—

1928-29.

—	Original Works.		Repairs.	Total from revenue.
	From loan.	From revenue.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	28·67	4·84	36·78	41·62
Local	..	5·10	23·79	28·89
Total .	28·67	9·94	60·57	70·51

1929-30.

—	Original Works.		Repairs.	Total from revenue.
	From loan.	From revenue.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	23·17	1·49	33·76	35·25
Local	..	3·85	22·00	25·85
Total .	23·17	5·34	55·76	61·10

1930-31.

—	Original Works.		Repairs.	Total from revenue.
	From loan.	From revenue.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	19·43	5·62*	33·82	39·44
Local	..	2·67	21·95	24·62
Total .	19·43	8·29	55·77	64·06

* Includes Rs. 2·89 lakhs from Central Road Development Account.

In the three years ending 1930-31 provincial revenue expenditure amounted to Rs. 116·31 lakhs out of a total of Rs. 195·67 lakhs ; that is

some 59 per cent. of expenditure has been from provincial funds. Out of a total length of roads of all classes of 35,376 miles, 3,746 miles or 10½ per cent. are provincial; whilst of 7,776 miles of metalled roads, 3,146 miles or 40½ per cent. are provincial.

8. *Communications in relation to the area and population served.*—As explained in our report on the conditions in the Punjab, in order to enable a comparison to be readily made of the state of communications in different provinces, unaffected by the presence or absence of large desert or forest areas, we propose to present these statistics upon the basis of the total area and population of districts having a density of population of 100 per square mile and over. In the United Provinces the only districts excluded from consideration by this formula are Almora, Garhwal and Naini Tal. The density in the latter district actually slightly exceeds 100 but in view of its special characteristics we feel that its exclusion will result in a more accurate picture of the main conditions. In Appendix 1 attached will be found certain particulars for the area excluding these districts. From this it will be seen that the mean density of population over the whole area is above 500 per square mile; that the area served by one mile of railway is 18·80 square miles (the mean condition being thus that the most distant point from any railway is 9½ miles); and that the area served by each mile of metalled road is 12·20 square miles, and by all roads taken together 2·85 square miles. Thus the mean condition is that, taking all roads, the greatest distance from any of them is less than 1½ miles. In the area with which we are dealing of 93,000 square miles, only 25,109 square miles or 28 per cent. are more than ten miles from any railway. Of the 7,776 miles of metalled road in the province, 3,109 miles or 40 per cent. of the total are parallel with a railway and within 10 miles of it. Of 4,952 miles of railways, 3,109 miles or 63 per cent. are paralleled by metalled roads.

In general the mesh of the railway system is fine, and in existing economic circumstances, can leave little or no scope for new railway development, except possibly in the area served by the Bengal and North Western Railway. The milage of metalled roads is considerable but a large proportion is parallel with railways. The condition of metalled roads at present gives grounds for anxiety, and suggests that the future will require, first, the strengthening of existing metalled roads, particularly those of kankar, and thereafter the general improvement of unmetalled roads, which are much cheaper to improve and maintain than even kankar roads. At the same time there are in most districts one or more feeder roads of importance that will require early development to a stage beyond that of the mere improved earth road.

9. *Major Bridges.*—No description of the general conditions in the United Provinces would be complete without a reference to the question of road bridges. There are many large rivers, *e.g.*, the Ganges, the Jumna, the Sarda, the Gogra, the Chambal, the Ram Ganga, the Kem, etc., etc., and while many are provided with road bridges, there appear to be no less than 50 important crossings where there are boat or pontoon

or temporary pile bridges in the dry season and ferries for the rest of the year. In addition there are many other places where interruptions may occur at times of flood. The rivers are often the boundaries between districts and the flow of local trade and travel has from time immemorial adjusted itself to the limitations imposed by these barriers; but that, with the increasing range of road transport now possible, certain of these may give rise to serious inconvenience and restriction of traffic; cannot be doubted. The bridging of certain of these obstacles should clearly be considered as part of any consistent plan of road developement. We are not however called upon, and should be unable in the time at our disposal, to suggest the extent to which bridging should from the point of view of economic development, be assigned any priority of importance.

9-A. *Saving in agricultural carriage resulting from good roads.*—We endeavoured to ascertain the saving in the cost of rural transport that, results from good roads. Agricultural marketing is of course usually done in private carts but the difference in the cost of hiring transport probably reflects the additional wear and tear of cattle and carts in all cases. No very definite estimates exist of the difference in the rates for hired transport over good and bad roads respectively but the saving in the charges over a metalled road as compared with a bad unmetalled road appears to be not less than 20 per cent. It is agreed that there would also be a saving in the case of a good and well maintained unmetalled road.

9-B. *Larger villages not served by the road system.*—As a rough measure of the extent to which the existing road system if improved would serve rural areas, we enquired the number of villages of 1,000 population and over not on any public road and the milage of new road required to serve them. As illustrating the position we may state that we were told that in Cawnpore District there are 60 such villages requiring 160 miles of new road; in Moradabad 82 such villages requiring 180 miles of road; and in Gorakhpur 263 such villages requiring 585 miles of new road. The cost of new unmetalled road 20 ft. wide for village links is variously estimated at Rs. 500 to Rs. 2,000 per mile. With any scheme for the general improvement of roads the question of bringing important villages into touch with the road system, and the agency by which this should be done, will have to be considered.

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS IN THE UNITED PROVINCES.

10. *Railways serving the United Provinces.*—By far the largest area of the United Provinces, comprising the basins of the Ganges and the Jumna and the sub-montane country to the North and East, is served by two Railway Administrations, the East Indian and the Bengal and North Western. The East Indian Railway has for some years had merged in it the old Oudh and Rohilkhand State Railway; and the Bengal and North Western Railway has closely associated with it the Rohilkund and Kumaon System, which works the Lucknow-Bareilly State Railway. The Bengal and North Western Railway also exercises running powers over the East Indian Railway metre gauge link between Cawnpore and Burhwal.

The Railway next in importance is the Great Indian Peninsula which in getting access to the cities of Muttra, Agra, Cawnpore, and Allahabad serves certain areas to the South of the Provinces.

The broad gauge system of the Bombay, Baroda and Central India Railway penetrates the South-West extremity of the Province of Agra for a few miles to reach Muttra and Agra; while a metre gauge branch of the same System runs from Achnera *viâ* Kasganj to Cawnpore, providing, in conjunction with the Cawnpore-Burhwal link already alluded to, a connection between the metre gauge System of the North East India and those of Rajputana.*

Some distance inside the Western edge of the Province of Agra runs the North Western Railway line joining Delhi with Saharanpore; and side by side with the Eastern Jumna canal in the same area is the Shahdara-Saharanpore 2′ 6″ light gauge Railway.

A.—East Indian Railway.

11. *Area served by the East Indian Railway.*—With its point of origin and headquarters at Calcutta the East Indian Railway serves an important area of Bengal and the coal-fields of Bengal and Bihar. Its Grand Chord, Main, and Loop Lines traverse Bihar, and its reunited Main Line enters the United Provinces in the neighbourhood of Moghalsarai. In the United Provinces the Railway has two main routes, the original East Indian Main Line from Moghalsarai to Delhi, and the former Oudh and Rohilkhand Main Line from Moghalsarai to Saharanpore.

* As in the course of our tour we visited the United Provinces before Bombay, we are unable in this advance copy of our report on the United Provinces to furnish any information in regard to the effect of motor competition on those portions of the Great Indian Peninsula Railway and the Bombay, Baroda and Central India Railway serving the United Provinces. This information has now been obtained and is included in the supplement at page 48.

There are also several branches. The East Indian Railway Administration has naturally furnished us with figures relating to the whole of the system and not only for that portion of it in the United Provinces; but wherever we quote such figures in this Report we draw attention to this point and we have, when it has been possible to do so, worked out proportionate figures appropriate to the United Provinces.

12. *Motor competition on roads parallel with the East Indian Railway.*—The road system of the United Provinces has naturally been framed to provide connection between the important cities and towns, and the alignment of the East Indian Railway has developed in the same direction. It follows, therefore, that a large milage of metalled roads, amounting approximately to 1,350 miles out of a total of 7,776 miles in the United Provinces, or about 17 per cent. of the whole, run side by side by the East Indian Railway, main line or its branches, and the railway has for the last few years, suffered considerable losses in passenger revenues, due to the motor buses plying over these roads.

13. *Decrease in 3rd class passenger earnings.*—Like other railway Administrations, the East Indian Railway has been unable to estimate accurately the losses sustained by the Railway owing to motor competition. Trade depression is the principal cause for the steep fall in passenger earnings during the last two official years, and it is almost impossible to ascertain what proportion of these large decreases is due to competitive bus services. It is, however, possible, to make some deductions from the annual figures of 3rd class passengers carried, throughout the System and the revenue derived therefrom for the period 1924-25 to 1931-32. We give these figures in the table below :—

Year.	No. of 3rd class passengers.	Receipts.
		Rs.
1924-25	69,704,000	5,43,27,000*
1925-26	66,920,000	5,09,42,000*
1926-27	67,260,000	4,91,72,000
1927-28	69,692,000	5,19,94,000
1928-29	64,837,000	4,81,10,000
1929-30	65,650,000	5,11,76,000
1930-31	60,724,000	4,56,25,000
1931-32	56,051,000	4,34,99,000

* (Exclusive of receipts from season and zone tickets.)

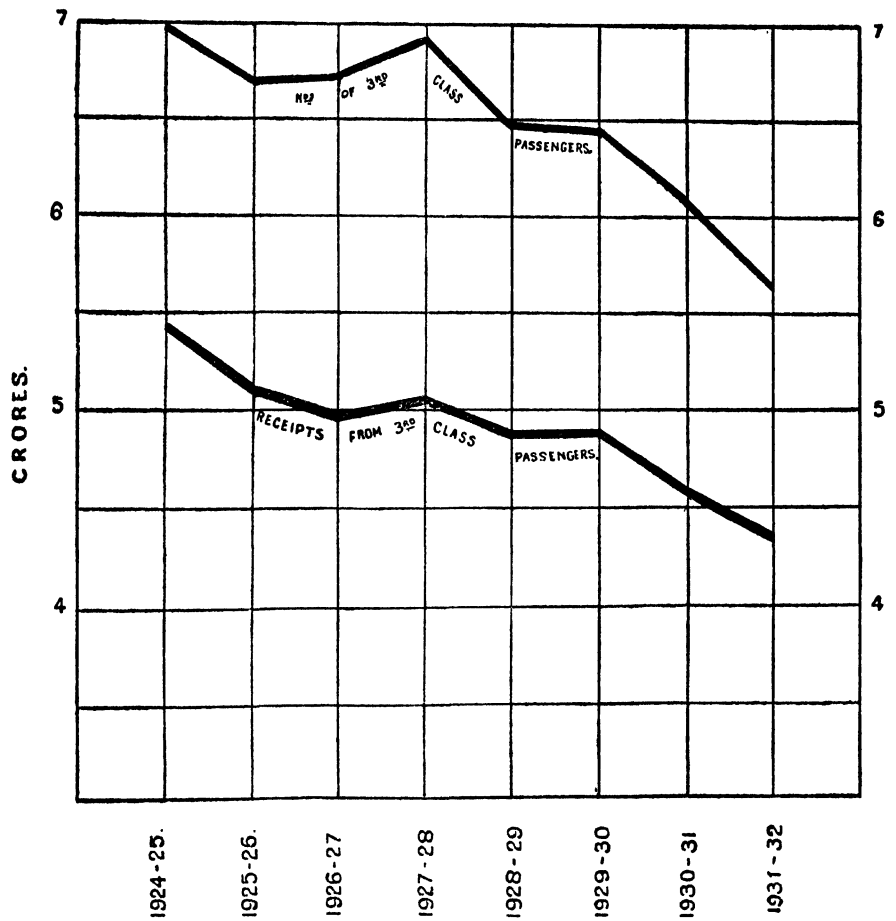
The East Indian Railway regards the year 1924-25 as a normal year, but it will be noticed that there is a considerable fall in the number of passengers carried and receipts during the following year, 1925-26. Those decreases were almost entirely due to the relinquishment by the E. I. Railway of the Jubbulpore-Allahabad Section to the G. I. P. Railway, and the Delhi-Ambala-Kalka Section to the N. W. Railway. So

To face page 9.

E. I. RY.

Nº OF 3RD CLASS PASSENGER AND EARNINGS 1924-25 TO 1931-32.

(EXCLUDING MELA TRAFFIC)



far as the *numbers* of 3rd class passengers are concerned it will be observed that there is thenceforward an increase up to the year 1927-28, but so far as concerns *earnings*, the year 1926-27 shows a slight decrease, due almost certainly to a reduction in the scale of fares for passengers travelling over 300 miles. But if allowance is made for—

(1) Handing over of certain sections to other railways, and

(2) The reduction of fares for zones in excess of 300 miles,

the number of passengers carried and receipts from them show a tendency to increase for the years 1925-26, 1926-27, and 1927-28. It was during the latter year that motor competition first made itself felt.

Before, however, the figures quoted above can be accepted as correctly representing the normal development that has taken place, further allowance must be made for abnormal traffic dealt with on the railway during the Kumbh Mela at Hardwar in Spring of 1927 and the Kumbh Mela at Allahabad during January and February 1930. The extra traffic arising from these Melas was as follows:—

	No. of passengers.	Rs.
Hardwar, 1927.		
March 12th—March 31st, 1927 . .	157,845	2,86,520
April 1st—April 21st, 1927 . . .	534,466	15,76,780
Allahabad, 1930.		
January and February	1,250,883	22,51,200

and the East Indian Railway consider that these figures should be deducted from those given at the commencement of the paragraph. The modified figures are given below:—

Year.	Total 3rd class traffic.	Receipts.
		Rs.
1924-25	69,704,000	5,43,27,000
1925-26	66,920,000	5,09,42,000
1926-27	67,102,000	4,88,85,000
1927-28	69,158,000	5,04,18,000
1928-29	64,837,000	4,81,10,000
1929-30	64,399,000	4,89,25,000
1930-31	60,724,000	4.56,25,000
1931-32	56,051,000	4,34,99,000

These figures are also plotted on the graph opposite.

14. *Decrease in short-distance passengers.*—The normal maximum range of road motor operation may be taken as 50 miles, and any attempt to estimate the loss of traffic due to this competition must take into consideration passengers travelling in the zone 1-50 miles. From 1927-28 the railway Administration have on record the percentage of 3rd class passengers travelling distances from 1-50 miles compared with the total

of 3rd class passengers carried and the corresponding percentage of receipts, and by applying these percentages to the normal estimated number of passengers and receipts as given in the previous paragraph, it is possible to obtain figures representing the normal number of passengers travelling 1-50 miles and the receipts therefrom from the year 1927-28 to 1931-32. The following table gives these figures :—

Year.	Normal 3rd class traffic.	% of 3rd class passengers in 1-50 miles zone to total.	Estimated normal 3rd class passengers in 1-50 miles zone.	Receipts from 3rd class traffic excluding mela traffic.	% of receipts from 3rd class passengers travelling under 50 miles.	Estimated normal receipts from passengers travelling under 50 miles.
1927-28 . .	69,158,000	81·6	56,432,000	5,04,18,000	38·9	1,70,91,000
1928-29 . .	64,837,000	78·8	51,091,000	4,81,10,000	31·5	1,51,55,000
1929-30 . .	64,399,000	76·9	49,523,000	4,89,25,000	29·8	1,45,80,000
1930-31 . .	60,724,000	77·8	47,243,000	4,56,25,000	30·1	1,37,33,000
1931-32 . .	58,051,000	78·5	44,000,000	4,34,99,000	30·0	1,30,50,000

From the above it will be noticed that from 1927-28 onwards there has been a considerable decrease in short-distance 3rd class passengers and earnings therefrom, as shown in the table below :—

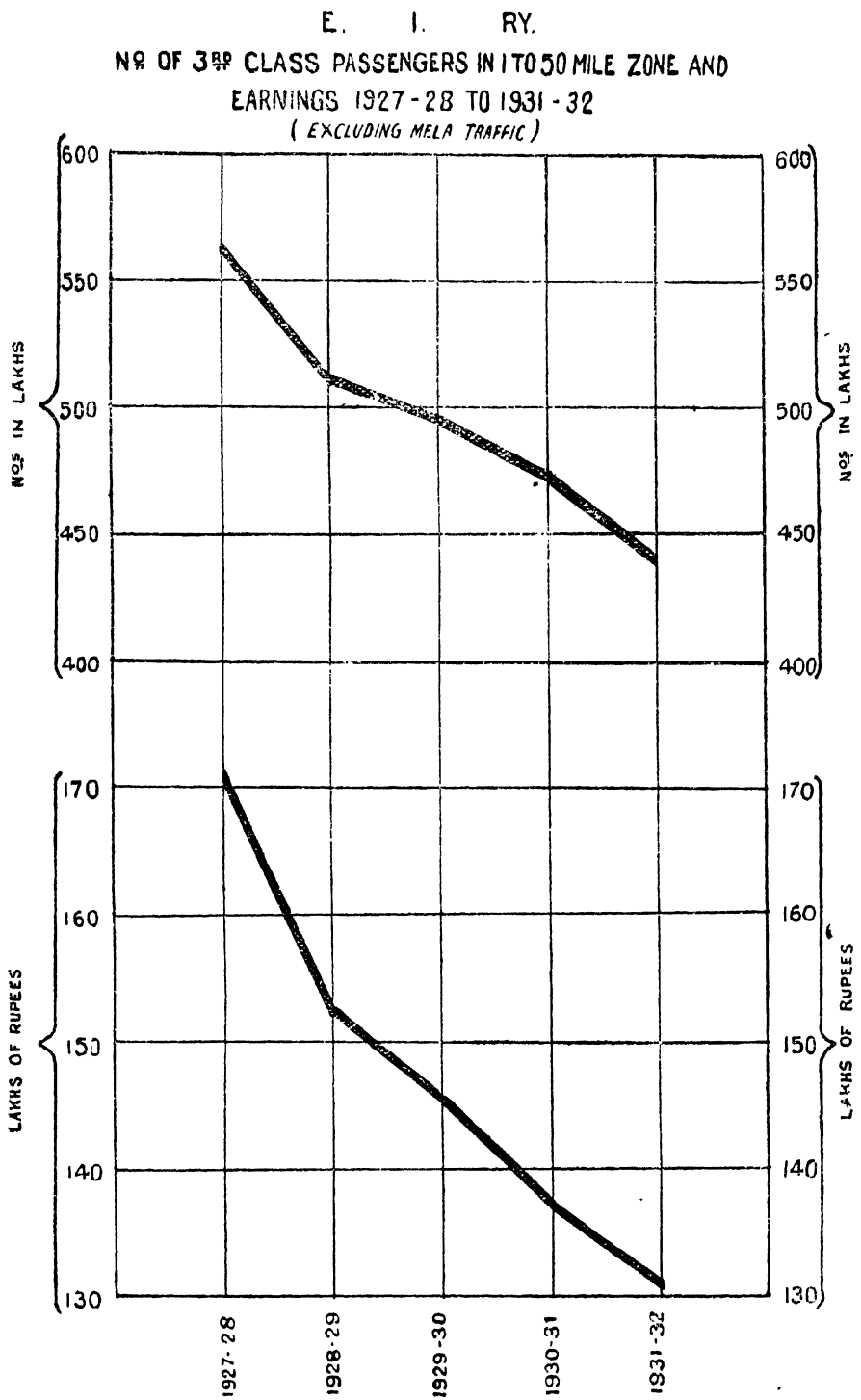
Passengers travelling in zone 1-50 miles ; decrease on figures for 1927-28.

Year.	Nos.	Rs.
1928-29	5,341,000	19,36,000
1929-30	6,909,000	25,11,000
1930-31	9,189,000	33,58,000
1931-32	12,432,000	40,41,000

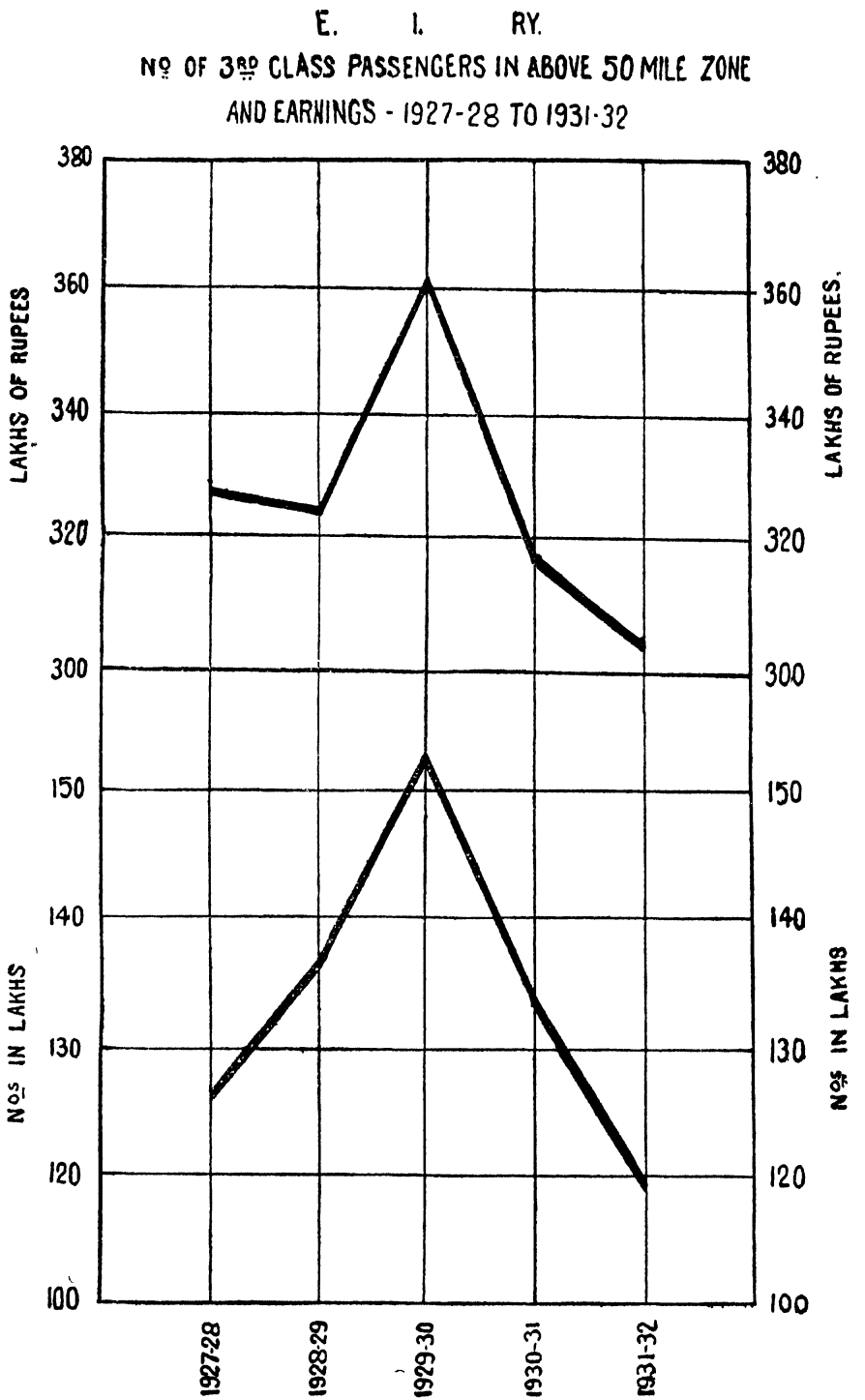
One feature in this table is particularly noticeable : the *largest individual* decrease between one year and the next occurred in 1928-29, as compared with 1927-28. The East Indian Railway report that it was during the latter year that motor competition first made itself felt, and it would seem that during the next year it reached its greatest degree of intensity, for some proportion of the decreases shown in subsequent years must, it is considered, be due to trade depression.

15. *Various methods of estimating losses due to motor bus competition.*—While it is impossible to obtain accurate figures of the losses suffered by the East Indian Railway owing to motor competition, the railway Administration points out that certain deductions may be made from the figures given above which help to arrive at what may be regarded as an approximate estimate. We also submit results arrived by two other methods, one of which tends to confirm the figure of losses given by the East Indian Railway. All these figures, however, must be treated with reserve, as they are, of course, largely conjectural.

To face page 11(i).



To face page 11(ii).



(I) The East Indian Railway calls attention to the contrast between the trend of short-distance traffic between the years 1927-28 to 1929-30, and that of long-distance traffic during the same period. We give the figures side by side :

Year.	E. I. Ry. 3rd class passengers zones above 50 miles.	Estimated Receipts.	E. I. Ry. 3rd class passengers zones 1-50 miles.	Estimated Receipts.
		Rs.		Rs.
1927-28	12,569,000	3,33,48,000	56,432,000	1,71,91,000
1928-29	13,737,000	3,28,99,000	51,091,000	1,51,55,000
1929-30	15,156,000	3,60,26,000	49,531,000	1,45,80,000
1930-31	13,435,000	3,18,22,000	47,243,000	1,37,33,000
1931-32	11,982,000	3,01,53,000	44,000,000	1,30,50,000

The curves followed by these figures from year to year are plotted on the graphs opposite; from these it will be seen that long-distance passengers actually increased in number during the first three years. Substantial decreases in long-distance 3rd class passengers and earnings only set in during the year 1930-31, when, the railway states, the trade depression made itself felt. On the other hand, a very sharp decrease occurred in short-distance passenger traffic in the year 1928-29—the year after the effects of motor competition became noticeable. This year, however, preceded the trade depression, which was not substantially felt until 1930-31, and in these circumstances there would appear to be reasonable grounds for suggesting that the decreases in short-distance traffic for the two years 1928-29 and 1929-30 were caused by motor competition. The railway lost in 1928-29, 19 lakhs, and in 1929-30, 25 lakhs.

But this is not all. The railway Administration points out that during the period 1921-22 to 1927-28 the average annual increase in 3rd class passenger traffic amounted to 1·5 per cent. and that this increase moreover continued in the number of passengers travelling above the 50 miles zone up to the year 1929-30. It is, therefore, reasonable to assume that, but for motor competition, a similar increase might have been expected in short-distance passenger traffic up to 1929-30, and that this increase was absorbed by road motor competition.

If, then, the 1·5 normal increase is allowed for in short-distance passenger figures for 1928-29 and 1929-30, the estimated losses of the railway due to motor competition may, the railway considers, be placed as follows :—

1928-29	22,58,000
1929-30	31,45,000

After the year 1929-30 the general economic depression supervened and this must have affected short-distance as well as long-distance passenger traffic. The E. I. Railway believe that the losses during 1930-31 and 1931-32 due to motor competition have remained more or less stationary, although during the year 1931-32 the number of competitive motor buses on the road was greater than the previous year. The railway had in the meantime taken steps to meet the competition and to some extent these have been successful, and possibly increased taxation has tended to hamper bus competition. Taking into consideration these points, the East Indian Railway consider that the actual losses sustained by the railway during the years 1930-31 and 1931-32 are not in excess of the loss estimated for the year 1929-30, and they assume that the annual loss to the railway due to the competition may be approximately placed at Rs. 31 lakhs and this figure applies to the *whole* East Indian System.

(II) A second method of computing the loss is based on the suggestion made by Mr. MacLean in April 1929 in his Report to the East Indian Railway on motor competition. Mr. MacLean assumed that, as a very approximate estimate, each competitive bus diminished the railway revenues by Rs. 10 per day. During the year 1931-32 there were approximately 1,424 buses plying in competition *throughout* the East Indian Railway, and if Mr. MacLean's formula is adopted, the estimated losses to the railway owing to these would amount to Rs. 51,97,600. The E. I. Railway, however, consider that Rs. 10 a day is definitely too high an estimate. Further, the assumption that (1) all this money would have found its way into the revenues of the railway if the buses had not been running and that (2) the buses run every day in the year, cannot reasonably be supported. We agree in thinking that the figure arrived at by this method is too high.

(III) We suggested to the East Indian Railway Administration yet a further method of arriving at some sort of estimate of their losses. We used a similar method for the North Western Railway, and it was based on the seating capacity of competitive buses, the assumed average trip per day run by them, and the fare charged per mile.

The East Indian Railway has worked out figures based on this method Province by Province, because conditions apparently differ considerably in the three Provinces served by the railway. Hitherto we have only given figures of estimated losses due to bus competition applicable to the *whole* of the East Indian System, but in the method we are now describing we can give an estimate of the losses suffered by the railway in the United Provinces.

As regards the varying conditions in the three Provinces, the railway Administration has called our attention to the following points. In Bengal and Bihar and Orissa there is practically no unemployment among buses ; whereas in the United Provinces there are in many districts more buses than the traffic requires and much unemployment in consequence. In Bengal, again, the competitive bus services generally consist

of short trips, virtually urban in character, between populous centres in the coal-fields, or say, from the suburbs into Calcutta. In the other Provinces the average trip per day is much longer. Moreover, the average passenger capacity per bus differs to a marked degree in each Province; in the United Provinces it is only 16·2, in Bengal it is 18·8 and in Bihar and Orissa it is as much as 21·3.

In the United Provinces the number of buses on competitive routes is 1,094. Among the routes regarded as competitive the E. I. Railway has included certain short-circuiting routes where it is considered that the railway has reasonable chances of competing for the traffic. But there is a good deal of unemployment among the buses in the United Provinces, so the railway Administration has assumed in its calculation that, on an average, only one-third of the 1,094 buses get a trip daily. The average daily round trip is 64·2 miles and the average seating capacity of the buses is 16·2. The railway has taken 3 pies as the fare per mile per passenger and we accept this, because though it is lower than 3½ pies ordinarily charged by railways, it will compensate for specially low rates quoted by the railway on routes where competition is intense. With the above factors the calculation is as follows :—

No. of buses.		Average daily trip.		Average seating capacity.		Fares per mile.		No. of days in a year.
1094	×	64·4	×	16·2	×	3	×	365

$3 \times 16 \times 12$
= Rs. 21,51,892.

This figure gives the estimated losses in the United Provinces only. Similar calculations in Bihar and Orissa and Bengal produce the following figures :—

	Rs.
Bihar and Orissa	5,66,000
Bengal	4,85,000

Accordingly the total estimated loss for the whole of the East Indian Railway arrived at by this method amounts to Rs. 32,02,892, a figure which closely approximates the figure reached by method I.

We think that in view of the points we have assembled above, it would not be unreasonable to place the total annual loss suffered by the East Indian Railway from motor competition at about Rs. 30 lakhs.

The Agent states that the railway has also suffered loss of upper class passengers due to private motor cars and although it was generally admitted that upper class passenger traffic does not usually pay, upper class accommodation has to be provided and the loss is all the greater if this accommodation is hauled about empty. The Agent, however, pointed out that the losses from motor traffic were to some extent compensated for by the traffic in petrol, motor vehicles and motor accessories carried by the railway.

16. Long distance passenger traffic carried by motor buses in the area served by the East Indian Railway.—The East Indian Railway have given us the following cases of competitive motor bus services in the United Provinces with a lead of over 50 miles :—

	Miles.
Fyzabad to Bara-Banki	68
Lucknow to Rae Bareli	51
Sitapur to Shahjahanpur	52
Bareilly to Moradabad	57

In addition to the above there is a service of buses running between Benares and Allahabad 82 miles, in competition with the B. and N.-W. Railway (see para. 20 below) and the E. I. Railway routes.

The Traffic Inspector attached to the District Superintendent of Police, Lucknow, informed us that there was a through bus service plying between Lucknow and Shahjahanpur—a distance of 104 miles; the E. I. Railway, however, have not drawn our attention to this service.

The Agent of the East Indian Railway told us that during the Kumbh Mela at Allahabad in January and February 1930, a very heavy bus service sprang up between Cawnpore and Allahabad—a distance of 118 miles.

We record these particulars as suggesting that the range of motor passenger transport may considerably increase under present conditions. We think it is generally felt that the railway should retain the long-distance passenger traffic, and there is little doubt that such traffic can most economically be served by the railway. However, with bus trips such as the above coming into existence there is the danger that some of the long-distance passenger traffic of the railway will be diverted to the road unless steps are taken to restrict motor transport to shorter leads.

17. *Goods Traffic by Motor Buses in the area served by the East Indian Railway.*—The East Indian Railway reports that for some years there has been a certain amount of merchandise carried between Cawnpore and Lucknow by motor transport, and attemps have been made to meet the competition by attaching a wagon daily for "smalls" to one of the *passenger* trains running between these two points. This step has met with a measure of success. Otherwise we were informed that, so far, the carriage of merchandise by motor transport has not assumed important proportions, but it is recognized that the matter is one constantly needing attention. The railway points out that in order to meet competition of this kind, which is likely to spring up at short notice particularly in those areas where there are an excessive number of motor buses plying), railways might be given greater powers than they have at present in regard to the quotation of parcels rates. Very often considerable delays occur in getting sanction to depart from existing scales and it is thought that if the railway had the necessary powers, competition by motor buses could be met with promptly and traffic could be retained

to the railway. It is obviously more difficult to regain traffic after it has been lost and the public have become accustomed to other methods of transporting their goods.

No estimate could be given us of the probable loss to the railway owing to merchandise being carried by motor transport, and it is clear that so far the traffic is unimportant. It is probable, however, that the public will soon begin to recognize the advantages road transport has over the railway in dealing with certain classes of smalls and when this takes place there is likely to be a considerable development in the traffic; and as there are so many principal roads in the United Provinces, parallel with the railway, the East Indian Railway has reasonable apprehension of suffering considerable losses in consequence.

18. *Methods adopted by the East Indian Railway to meet bus competition.*—The loss of short-distance traffic has been a matter of considerable concern to the East Indian Railway and we were informed that even for short distances up to, say, 20 miles, the railway considered it worth while to institute active steps to meet the competition, as a large proportion of the short-distance 3rd class passenger traffic carried on the railway has a range of only 20 miles.

The East Indian Railway has been resorting to the usual methods of meeting this competition. Cheap return tickets are on issue over sections where competition is acute and more suitable timings arranged for local trains. On some Divisions Sentinel coaches have been used, though not with very great success, chiefly owing to mechanical defects, limited speed and limited seating capacity. On the Moradabad and other Divisions light transit are now being run and halts unattended by railway staff have been arranged between the ordinary stations to permit of passengers joining the train at level crossings and other places where there is road or path connection with neighbouring villages. The guard of the light train issues tickets to passengers joining the train at such points.

B.—Bengal and North-Western Railway (including Rohilkund and Kumaon, Lucknow-Bareilly State Railway, and the Cawnpore-Burhwal link).

19. *Roads parallel with the Bengal and North-Western Railway and associated Lines.*—The total mileage of the Bengal and North-Western Railway and the lines worked by it, or associated with it, amounts to 2,685 of which about 1,474 miles lie within the United Provinces. There are approximately 760 miles of metalled roads running parallel with the Railway, or about 10 per cent. of the total mileage of metalled roads in the Provinces, but so far, the Bengal and North-Western Railway has not suffered from acute motor competition.

20. *Bengal and North-Western Railway and motor competition.*—We visited Gorakhpur, the headquarters of the Bengal and North-Western Railway System, and discussed with the Agent and other Officers of the railway the subject of motor competition. We found, from the information furnished to us, that motor buses are plying over about 500 miles of the 760 miles of metalled roads running parallel with the railway and in addition to these services there are a certain number of bus routes short-circuiting the railway. The competition, however, is at present on a limited scale and the railway Administration views it with little concern. We were given to understand that the reasons why motor buses have not succeeded in diverting much traffic to the road are as follows :—

(*a*) The low mileage rate for 3rd class passengers charged over the Bengal and North-Western Railway ; this is $2\frac{1}{2}$ pies per mile instead of $3\frac{1}{2}$ pies on most other Lines.

(*b*) The poor maintenance of some of the roads running parallel with the railway, which definitely restricts motor bus traffic ; during the rains we were told that many of the roads are impassable.

(*c*) The more conservative habits of the people in those parts of the United Provinces served by the Bengal and North-Western Railway.

But of these reasons, the Bengal and North-Western Railway Administration regards (*a*) as the most important. The United Provinces are generally densely populated and the wealth per head is almost certainly less than in some other Provinces, as for instance the Punjab. Low railway fares are, therefore, a great inducement to the people to continue using the railway and the Bengal and North-Western Railway is fortunately in a position to quote a low mileage rate, for it is a metre gauge system constructed generally through easy country at a comparatively low cost per mile.

To emphasize what an important effect low passenger fares exercise on the traffic, our attention was drawn to what is taking place over the Benares-Allahabad branch of the Bengal and North-Western Railway in contrast to the rest of the system. This line runs for the most of its length parallel with the East Indian route between these cities *viâ* Jhangai, and in consequence the Bengal and North-Western Railway Administration is under agreement with the East Indian Railway not to charge over the branch a lower mileage rate for 3rd class passengers than $3\frac{1}{2}$ pies, the rate in force on the East Indian Railway System. The Grand Trunk Road runs alongside the Bengal and North-Western Railway for the whole of its length (82 miles) between Benares and Allahabad, and motor competition is acute, 14 buses now plying between the places. The Agent of the Bengal and North-Western Railway states that the success of these buses could only be accounted for by the higher

passenger fares charged on the railway, and he claimed that if the Bengal and North-Western Railway fares were applied over the section, the railway would almost certainly regain the traffic.

20-A. *Estimated loss of earnings due to motor bus competition.*—The Bengal and North-Western Railway Administration represents that some 275 buses are now plying on routes either parallel with the Railway or short-circuiting it, and if in accordance with Mr. MacLean's formula the average earnings of these buses is assumed to be Rs. 10 each daily and that this money would find its way into the railway revenues if the buses were not running, the total estimated loss would amount to: $275 \times 10 \times 365$=Rs. 10,03,750 yearly. From this figure, however, must be deducted the proportion earned by buses plying on the road parallel with the Cawnpore-Burhwal link over which the Bengal and North-Western Railway exercises running powers only. This amounts to Rs. 2,33,600 and if deducted from Rs. 10,03,750 given above, would give an estimated loss to the Bengal and North-Western Railway System proper of Rs. 7,70,150.

The Bengal and North-Western Railway Administration considers that this figure is an over-estimate. It cannot be assumed that the bus services run throughout the year, as many of the roads are impassable during the monsoon. The Agent of the Bengal and North-Western Railway thinks that it would be more reasonable to assume an annual loss of Rs. 5,00,000.

There is practically no bus competition in those parts of Northern Bihar served by the Bengal and North-Western Railway; so the estimated loss given above occurs wholly in the United Provinces.

C.—North Western Railway.

21. The North Western Railway line between Delhi and Saharanpore traverses the western end of the United Provinces and a metalled road from Delhi to Meerut, Muzaffarnagar, Roorkee, and Dehra Dun runs parallel with the North Western Railway alignment as far as Muzaffarnagar. The railway accordingly suffers from acute motor competition between Delhi and Meerut, and Meerut and Muzaffarnagar. From the information we have received from the Divisional Superintendent of the Delhi Division of the North Western Railway, it would appear that there are more buses on this road than the traffic justifies and the buses between Delhi and Meerut probably only get a turn on the road once in four days. The railway is handicapped in competing for this traffic because the railway stations are sometimes as far as two miles from the villages, whereas the road runs through most of them.

No separate estimate was given to us of the losses suffered by the North Western Railway owing to these buses; in fact the services between Delhi and Meerut, and Meerut and Khatanli, were being re-examined at the time we visited Lahore, and the report on them had not been completed

Pilgrim and Terminal Taxes on Passenger Traffic: Terminal Taxes and Octroi on Goods, Parcels, etc.

22. (*A*) *East Indian Railway.*—The East Indian Railway informs us that pilgrim or Terminal Taxes on passenger traffic are levied at the following stations served by that railway in the United Provinces :—

1. Benares Cantt.
2. Kashi.
3. Allahabad.
4. Prayag.
5. Prayag Ghat (when opened).
6. Fyzabad.
7. Fyzabad City.
8. Ajodhya.
9. Ajodhya Ghat (when opened).
10. Hardwar.
11. Jawalapur.
12. Rikhikesh.

At the last three places the tax is at the rate of 1 anna 6 pies per passenger, but at all other stations one anna per passenger is levied. The tax is levied on *all* railway passengers travelling to Hardwar, Jawalapur and Rikhikesh, but at other towns passengers travelling to the pilgrim centre from distances within a radius of 30 miles are exempt.

The levy of this pilgrim tax is a handicap to the railway, because with the exception of Rikhikesh, no corresponding tax is levied on passengers arriving by road. It was at the instance of the East Indian Railway that the tax was extended to road passengers at Rikhikesh.

Although, there is no precise information on the subject, there are strong grounds for thinking that passengers evade the pilgrim tax by using road motor services ; it is well known, for instance, that passengers alight at Moghalsarai and travel by road to Benares Cantonment and Kashi to evade the pilgrim tax levied at these places.

As regards octroi, or terminal tax on goods and parcels, this is collected at the following places served by the East Indian Railway in the United Provinces :—

1. Agra.
2. Hathras Killah.

3. Saharanpore.
4. Khurja.
5. Lucknow.
6. Etawah.
7. Farukhabad.
8. Allahabad.
9. Benares.
10. Cawnpore.
11. Dehra Dun.
12. Hardwar.
13. Jawalapur.
14. Moradabad.
15. Partabgarh.
16. Chandausi.

In the majority of cases the tax is also levied on road-borne traffic, but the railway complains that the tax on road traffic can only be assessed by rough and ready methods, and that in consequence road-borne traffic pays, as a rule, less than rail-borne traffic for which a varying scale of charges is prescribed for an extensive list of goods. Apparently it was recognized, when terminal taxes were first imposed, that there would be difficulty in treating rail and road traffic alike, for, in the memorandum of the principles governing the imposition of these taxes the following appears :—

> " the scale of the tax on articles entering a Municipality by road or water need not always be approximate to that on articles entering by rail, but arrangements should be made in each case to prevent, as far as possible, any prejudicial effect on rail-borne traffic."

The railway informed us that little or nothing is done to carry out the last recommendation.

23. (B) *Bengal and North-Western Railway.*—As already appears in this Chapter, the Bengal and North-Western Railway is not greatly concerned by motor competition, and though the railway Administration recognizes that the collection of pilgrim taxes in certain cases favours road traffic at the expense of railways, the Agent informed us that his Company objected to the Pilgrim Tax not so much on this account as on the grounds that the tax operated as a check to traffic and was generally out of all proportion to the services rendered to pilgrims by the Municipalities collecting it.

We record these views, but as we are only concerned with the effect that the tax may have in diverting railway traffic to the road, we think it would be beyond our province to offer comments on them.

24. *Pilgrim Tax and recommendations of Road Taxation Committee.*— Mr. J. C. Rose, Dy. Chief Commercial Manager, Rates and Development, East Indian Railway, who represented the interests of railways serving the United Provinces on the recent Road Taxation Committee (see next Chapter) stated before the Committee the case for railways as regards pilgrim tax and the Committee have recommended that the proposed Traffic Control Boards should devise suitable methods for collecting pilgrim taxes from passengers moving to pilgrim centres by road motor services. The question will, therefore, presumably be dealt with by Government when the recommendations of the Committee are considered. It is, we think, not only in the interests of the railways, but also of the Municipalities themselves, that the burden of such taxes should be more evenly distributed between rail and road traffic.

CHAPTER IV.—MOTOR TRANSPORT IN THE UNITED PROVINCES, ITS TAXATION AND REGULATION AND PROPOSALS FOR THE FUTURE.

25. *Road Traffic Taxation Committee.*—Shortly before our enquiry commenced the local Government had set up a Committee having the following terms of reference :—

I. To explore methods by which expenditure on road upkeep could be distributed over the various interests involved;

II. To consider the possibility of raising fees from forms of traffic other than motor traffic;

III. To consider the levy of tolls;

IV. To consider the amendment of the rules framed under the Motor Vehicles Act; and

V. To deal with proposals for limiting the use of roads for commercial purposes to such persons or bodies as are prepared to subscribe to their upkeep.

By the time we arrived in the United Provinces this Committee had prepared a draft report which was in process of circulation to the members of the Committee for approval prior to submission to the local Government. By the courtesy of Mr. H. A. Lane, I.C.S., Secretary to the Government of the United Provinces in the Revenue and Public Works Departments, we were allowed to see a copy of the draft report. The proposals therein contained are extremely important and relevant to the subject matter of our enquiry, but we are unaware whether our report will be made public and whether this may possibly occur before the report of the Committee has been accepted by the local Government and released for publication, in which circumstances we feel that it would not be proper for us to refer to the recommendations of this Committee in any detail. Doubtless before the proposed conference is assembled in January, the local Government will have decided upon the arrangements which they contemplate making as a result of the recommendations of this Committee. We have, however, made use of the report for statistical information and will briefly refer in a general way to certain of the recommendations which closely affect the subject matter of our enquiry where this appears to be permissible.

26. *Numbers of Motor vehicles registered.*—There were in the United Provinces on December 21st, 1931, the following number of motor vehicles :—

Motor cycles	1,871
Motor cars	9,941
Motor taxis	716
Motor buses, Motor lorries	4,663

This number, particularly in the category of buses and lorries, appears to have been decreasing somewhat owing to the general depression and a further decrease was expected by the Committee, partly as a result of the elimination of superfluous vehicles responsible for cut-throat competition which might be expected to follow upon certain of their recommendations, and their estimate of the number of buses and lorries in the near future was 3,500.

27. *Recommendations of Committee.*—The recommendations of this Committee to which it is perhaps permissible to refer included the imposition of provincial taxes on motor vehicles with, as a corollary, the abolition of local taxes and imposts; the limitation of the number of public service vehicles permitted to ply on any route with the object of reducing competition to reasonable limits, thus enabling the proprietors of bus services to provide better public service and to pay the provincial tax recommended; and the establishment of traffic control authorities, roughly one authority for each Commissioner's division, to be presided over by the Commissioner, and be composed of the officials principally concerned and a certain number of nominated non-officials to determine matters arising in connection with the regulation of motor vehicles, such as the restriction of the number of vehicles on any route, and other connected matters. The Committee also appears to have recommended consideration of compulsory insurance by motor bus proprietors, or drivers against claims for injury or death either in the case of the general public or their passengers. The recommendation regarding the establishment of traffic control authorities is of particular interest in that it amounts in effect to much the same thing as the proposal to which we have referred in paragraph 43 of our Report on the conditions in the Punjab, and it seems that similar problems have suggested a similar line of action in both provinces.

28. *Effect of Recommendations.*—The recommendations of this Committee are apparently directed towards the provision of better facilities for the motor bus using public, which combined with the elimination of cut-throat competition will probably have the effect of increasing fares and thus bringing them to a level at which it will be less difficult for the railways to meet this competition. We have been fortunate in having with us during our tour of the area covered by the East Indian Railway Company, Mr. J. C. Rose, Deputy Commercial Manager of that railway, who also represented railway interests on this Committee above referred to. Mr. Rose is of the opinion that the recommendations will go a long way to remove the objections of the railways that competition has hitherto often been unfair and, incidentally, uneconomical and a perusal of the draft report leads us to the same view.

Whatever may be the final outcome of these recommendations, substantial alterations may be expected in the conditions under which public service vehicles ply for hire in the United Provinces, and that such alterations would appear to be timely is, we consider, borne out by the impressions we have gathered from our discussions with local officials during our tour.

29. *Over-crowding of motor buses.*—It appears that over-crowding is a frequent evil. In the Moradabad District, especially, there are so many buses running that there is severe competition between the buses themselves and we were informed by the Collector, the Deputy Superintendent of Police, and one of the local bus proprietors that buses were only getting a round trip about once in three or four days. With such conditions obtaining it is obvious that drivers must be tempted to make as much money as they possibly can whenever they get a turn on the road. Again, unrestrained competition has naturally had the usual effect of reducing bus fares to what must, we think, be an uneconomic level. A number of buses are plying on the road between Moradabad and Chandausi—28 miles—and the fare charged is 0-8-0. The capacity of these buses is about 17 seats, so that with the authorized complement of passengers 136 annas would be earned per trip. If, however, five annas is regarded as a reasonable figure for the overall operating cost per mile, at least 140 annas would have to be collected per trip to meet these working expenses alone. The Deputy Superintendent of Police stated that with the prevailing practice of permitting an unlimited number of buses to ply over a route, his staff is inadequate to prevent over-crowding.

At Lucknow we met Mr. C. A. Anderson, District Superintendent of Police, who had represented Mr. Hollins, Inspector General of Police, on the Committee already referred to in paragraph 25 above. Mr. Anderson had with him his Traffic Inspector who gave us much useful information. There is so much over-crowding in the Lucknow District that the Superintendent of Police has been compelled to recommend a substantial increase in scale of fines imposed. He has even contemplated suspension of permits, but he is reluctant to have recourse to such a penalty, which in his opinion, is too drastic and for the present he is waiting to see the effect of enhanced fines.

Over-crowding in Lucknow does not appear to arise from quite the same causes as in Moradabad, because competition between buses is less acute. In Lucknow it seems that buses on the average get a trip every alternate day, but in the winter, when traffic is brisker, probably not less than $\frac{2}{3}$ of those holding permits ply daily. Again, cut-throat competition is to some extent modified in this case, because the number of buses on certain routes is restricted by the Police. Apparently what here gives rise to over-crowding is the prevailing practice of a bus proprietor letting a bus out to a driver at a daily rate of hire, the driver being allowed to retain for himself any takings in excess of this, under which arrangement he has every inducement to overload.

In Gorakhpur we were informed that over-crowding was rife and Mr. Murari Lal, Personal Assistant to the Collector (whom we interviewed in the absence of Mr. Hallows, I.C.S., the Collector), stated that in his opinion nothing but the suspension of permits would put a stop to it.

30. *Opinions as to the need of stricter control.*—There is we find a considerable weight of opinion in favour of stricter control of buses in directions besides over-crowding, such as—

(1) Limitation of the number of buses plying on a route;

(2) limitation of the range of buses competing with railways, *i.e.*, "Zoning" and

(3) publication of time tables for bus services, on certain routes.

(1) *Limitation of the number of buses.*—On this point Mr. E. H. Cornelius, Deputy Chief Engineer, Public Works Department, who was deputed by the local Government to co-operate with us in our investigations, definitely stated that many of the roads in the United Provinces require relief from the excessive number of vehicles now using them, if they are to be maintained in a reasonable condition. In his opinion the transfer of traffic from the railway to the road had become a source of embarrassment to road authorities and in certain areas he would welcome a return of such traffic to the railway. In Lucknow we found that the number of vehicles plying over the Cawnpore-Lucknow road, for instance, had already been restricted and this would indicate that some such measure is deemed to be desirable, at least on certain routes.

(2) *Limitation of range.*—In our questionnaire we circulated for district officers we invited opinions as to the desirability or necessity of competition between motor bus services and railways. It appears to be the general view that bus services are of great public benefit and have come to stay, but Mr. Harper, the Deputy Commissioner, Lucknow, stated that in his opinion the range of a bus competing with a railway might with advantage be limited to twenty miles and that for longer distances special permits should be required. This opinion was generally shared by Mr. J. C. Donaldson, Collector of Allahabad.

(3) *Publication of time tables.*—Mr. J. C. Donaldson, Collector, Allahabad, was of opinion that the proprietors of buses should publish time tables because these would not only be of use to the public, but would assist the Police in controlling public motor vehicles especially in the matter of speed.

31. *Monopolies and Motor Transport Companies.*—We found a certain weight of opinion in favour of monopolies and in three districts in the west of the Provinces one bus proprietor has been granted a virtual monopoly over 30 unmetalled routes on condition that he maintains the roads in a reasonable state of repair. We interviewed this gentleman and he told us that so far as he was concerned the system had worked so well that he was applying for an extension of his agreement to the Dehra Dun District. It is probable that he is able to offer a reasonably good public service by virtue of his monopoly and protection from that unrestrained competition which frequently does not, in the long run, lead to the benefit of the public. With this arrangement, moreover he

is able to publish time tables which, we are convinced, are a great convenience. Mr. J. C. Donaldson, Collector of the Allahabad District, is of opinion that monopolies, though open to certain obvious objections, are definitely in the interests of the public, if properly controlled.

Whether subsequent development takes the form of controlled monopolies or not, we are of opinion that encouragement could, with advantage, be given to the concentration of motor transport in the hands of reputable Companies who will have some sense of responsibility. Such Companies would almost certainly provide a better service for the public; they would have less inducement to violate the motor regulations and this in itself would lessen the difficulties which the Police now experience in enforcing them; and finally (as was represented to us with considerable emphasis by the Agent, East Indian Railway) Railway Administrations could co-operate with such concerns and enter into contracts with them for complementary services. This development has, of course, already taken place in England doubtless to the benefit of the general public, but in India it is at present largely impossible with what, for want of a better expression, we may call the "Owner-Driver Bus System".

32. *Estimate of buses plying daily in the United Provinces.*—We have encountered great difficulty in estimating with any accuracy the proportion of buses registered which are in daily use and the average length of a trip. From statements given us at Moradabad it appears that out of the 74 buses registered only about one-fourth get a trip on the road daily. In Lucknow we were told that on some routes buses get a trip every other day; on others, again, (particularly over the shorter routes) they may do a round trip of perhaps 20 to 40 miles daily. On the road between Lucknow and Cawnpore 49 buses have permits but according to the statement of the Police Traffic Inspector, owing to repairs, repainting, etc., only about 28 to 32 of these are usually on the stand daily, and of these, only half would get a trip daily. In Cawnpore we were unable to obtain any estimate of the proportion of registered vehicles in daily use, but it appeared that competition was acute and fares in consequence low, and it was probable, therefore, that the proportion of the vehicles unemployed was considerable. In Gorakhpur there are 102 buses registered, but we were told that only about half to one-third of these were employed daily on a trip possibly of 30 to 50 miles. In general the position appears to be that the number of buses is in excess of requirements, but the information we obtained was often admittedly vague, and this suggests the need for more regular checks of this traffic. Moreover there are we believe considerable seasonal fluctuations and more vehicles ply during the winter months than at other times. Railways naturally need accurate information as to the extent of bus competition and we would suggest that when they have occasion to investigate this they do so in co-operation with the Police and the road authorities. Should the present Motor Vehicle Regulations be amended in the direction of obtaining closer control over motor transport, information as

to the number of public motor vehicles on the roads will be more readily available because more accurate and complete statistics will become a matter of routine record.

33. *Permits by District.*---Under the existing rules the number of permits for buses to ply for hire in certain districts or on certain routes is often limited, but it appears that for this purpose the district is too small an area and that a certain amount of confusion and inequality may occur in assessing traffic needs by localities or routes. This is one of the difficulties which, it appears might be met by the creation of divisional traffic control boards.

CHAPTER V.—BRANCH LINE PROJECTS.

34. In letter No. 4255-T, dated 24th June 1932, to the Local Governments it was stated that we were to obtain information in possession of Local Governments and Railways of cases where branch lines have been projected, but not constructed, and where a new or improved road might more economically serve the area. Both the East Indian and the Bengal and North Western Railways have given us particulars of projected branch lines and we append below our comments on them in relation to road development :—

35. *East Indian Railway.*—Some years back when extensive railway development was contemplated the E. I. Railway had a considerable number of railway projects in the United Provinces, but the Administration informs us that in view of the financial stringency all of them are at present in abeyance ; and, when they once more came up for consideration, it is likely that many will be definitely abandoned, especially the short branches where good roads could better serve the purpose.

(1) There was one project which had for its object the provision of an alternative route to the main line. This runs from Bulandshahr *viâ* Dibai and Kasganj to Phaphund. Construction of the line has been postponed as its principal object, to relieve the main line, has disappeared since the decision to double the line between Cawnpore and Tundla. We may point out that the area to be served by this line is already fairly well provided with communications and it is a matter for consideration whether it could not be better developed by a series of roads instead of the projected railway.

(2) Another project with a similar object—relief of the old Oudh and Rohilkund Railway main line between Moradabad and Lucknow—was to connect Chandausi with Audhpur. The area through which line would pass is not so well off in communications as that to be served by project No. (1), but the Agent of the B. and N. W. Railway informed us that his Administration had under consideration a proposal for running a metre gauge line from Budaun to Farukhabad. This line would serve very much the same country as the proposed E. I. project, and, being metre gauge, would cost considerably less to construct. Unless, therefore, the E. I. Railway main line (O. and R. Section) between Moradabad and Lucknow requires relief, the metre gauge project would appear to be the more remunerative of the two.

The following three small branches have been projected by the E. I. Railway but are considered unremunerative :—

(3) Phaphund—Phaphund City—Auriya. 16 miles.

(4) Bindi Road—Mitaur. 24 miles.

(5) Allahabad to Mahewa (Rajpur Ghat). 39 miles.

In all these cases we would suggest that good roads could more economically serve the area. There is a road already between Phaphund and Auriya and we understand the District Board has definitely agreed to improve this for motor transport.

36. *B. and N. W. Railway.*—In discussing Railway projects with the Agent, B. and N. W. Railway, we were interested to learn that the Company not only has under consideration a large number of new lines, amounting in all to about 400 miles, but would be quite prepared, if the financial situation permitted, to undertake their construction (with one possible exception) in spite of motor competition. Some of the schemes in fact are branch lines alongside roads where motor buses are already running, but the Administration is confident that it can provide a better, cheaper and more reliable service than the bus. The Agent explained to us that the reason why his Company was not proceeding with the construction of these lines was because the Government of India have the option of purchasing the Company's property in either 5 or 10 years, and the Company is naturally reluctant to lay out further capital on new branch lines, the full development of which it may never see.

Although there is only one case where the Agent agreed that road would better serve the area to be developed than a branch railway, we think it worth while to give below some details of the projects contemplated by the B. and N. W. Railway, as illustrating the attitude of that Administration towards new construction :—

(1) A line has been proposed between Ghugli, Maharajgunj and Pharenda. In this case the Agent of the B. and N. W. Railway stated that a road from Nautanwa to Ghugli would be sufficient to open up the country this branch line was intended to develop.

(2) Sajendra to Bansgaon and on to Barhalganj 36 miles. This line would develop a rich country where cane could be grown. The B. and N. W. Railway consider the line would pay 5 per cent. on capital outlay after about 7 years.

(3) Basti to Bansi—28 miles. A road already exists between these two places, but the Railway Administration considers that a branch line would provide a better and cheaper service. Cheap return fares would be quoted and a suitable time table arranged. The line would be a surface one and therefore cheap to construct.

(4) Bahraich to Bhinga—23 miles. A road already exists between these places but the B. and N. W. Railway considers that the proposed line would pay with cheap tickets and suitable trains.

ROHILKUND AND KUMAON RAILWAY SECTION.

(5) Shahjehanpur to Mailani *viâ* Puidhyan—36 miles. The E. I. Railway also have a projected line between these points, but the B. and N. W. Railway do not consider that a broad gauge line would pay, whereas they are sanguine that a metre gauge line would do so, although there is a road along part of the route.

(6) Kashipur to Kashgarh—30½ miles. The object of this line would be to tap the forest area. The Forest Department recently asked the B. and N. W. Railway whether this line was likely to be built because, if it is not, the Forest Department proposed to build a tramway instead. In this case, therefore, it would appear that a road would not serve the purpose.

(7) Bellarien to Dhaurahra extension—32⅜ miles. This railway would develop Doab country, which is very fertile and entirely without communications.

(8) Farukhabad to Badaun—56¾ miles. As already stated, the E. I. Railway have a projected line to serve much the same area. In the opinion of the B. and N. W. Railway Administration a metre gauge line would be remunerative here owing to its cheaper construction. (See para. 35 (2).)

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

37. *No existing programme.*—There is no comprehensive programme available for discussion. We understand that the financial position is such that no new expenditure on original works or new liability for future maintenance or the service of a loan could be incurred for several years. The Communications Board programme of road development of the year 1922 has been partly carried out, but the remainder cannot be regarded as representative of the works likely to be undertaken when conditions improve, because, we understand, circumstances, other than financial, have revealed the need for a general revision. This revision will be taken up in due course; at present little practical object would be served by discussing the programme as it stands.

38. *Reasons for attempting to forecast a possible programme.*—But during our tour we visited not only the headquarters of Government but also the districts of Moradabad, Lucknow, Cawnpore, Gorakhpur, Benares, and Allahabad and in most of these we had the benefit of hearing the views of district officers and certain Chairmen and other representatives of district boards as to their needs in the matter of improved communications. These views suggest the directions in which there will be demand for improved communications when finances recover, and while we are unable to frame any close estimate of the magnitude of, say, the ten year programme which might eventually take shape, we have endeavoured in the following paragraphs to set down the directions which this demand will apparently take, and to indicate by extremely approximate methods the possible extent of some such programme. We fully realise that, as elsewhere in India the magnitude of any programme must depend on the ability to maintain more roads with greater traffic, as well as upon the funds available for development; and that, given funds, there is no visible limit to the beneficial development that could be undertaken. We also realise that our impressions and the very rough calculations based upon them may be very wide indeed of the proper mark. But we feel that an attempt however crude to estimate the extent of immediate needs without regard to existing administrative distinctions may not be wholly without value.

39. *The problem of present metalled roads.*—In the first place, it appears to be generally the case that district boards are not only unable to improve and maintain their unmetalled roads, but are generally no longer in a position to maintain their metalled roads, and there are doubts whether even the additional funds which they may derive from the proposed provincial motor tax will suffice. The fact appears to be that with the present mixed traffic, kankar surfaces, which used to be economical, can no longer be maintained and that, even were much greater resources available, kankar is no longer economical. It seems to follow that before any great step forward can be made in the direction of providing extended facilities some economical alternative must be devised. Exactly in what direction this improvement will come is not

at present clear but we have ventured to suggest to the officer deputed by the Local Government to co-operate with us the possible relevancy of certain recent developments in the Punjab. A most important factor in this connection is that, while in those parts of India where the cost of maintaining water bound macadam was already high, economy has resulted from such improvements as surface treatments with tar or bitumen, in the United Provinces the previous level of maintenance budgets, determined by the cost of kankar roads under other conditions, was so low as to render it more than doubtful whether any form of improved surface could, by comparison, prove an economy. In other words, some substitute is required for kankar, but at the best this will require not only considerable initial outlay but also increased provision for maintenance.

We understand that the programme of the Communications Board included the transfer to provincial charge of certain of the more important roads previously in the charge of district boards, and the eventual strengthening or improvement and maintenance of these at provincial cost as an addition to existing provincial roads. But, whatever the administrative policy, it seems to be reasonable to suppose that of the 7,700 miles of existing metalled roads possibly at least one half can no longer be maintained in kankar. If, then, the problem is first the restoration or reconstruction of say 4,000 miles in some more durable materials, it would seem that the so-called higher types of surface must for some time for reasons of first cost be out of the question, and that even if as a temporary palliative more durable surfaces could be provided on old kankar roads at an average cost of, say, Rs. 7,500 per mile, an expenditure of about Rs. 3 crores would be needed and that this would still have to be accompanied by a substantial additional provision for maintenance. Any cheaper method of advancing these roads to the next stage of development could hardly be devised, and whatever the precise figure may be, it seems that in this direction alone very heavy expenditure will be the first requirement. It may however be suggested that among these existing roads there will be many that are parallel with existing railways; and, while deliberate abandonment would, generally be out of the question, where the case is eventually practically one of entire reconstruction, this might be considered on its merits side by side with demands for new developments in other directions.

40. *New feeder roads.*—Next to the preliminary reconstruction of existing metalled roads, we found a keen demand for additional metalled feeder roads in the various districts which we visited, and we assume that this demand is probably general. At the time of our visit to district headquarters it was inevitable that the discussion should turn upon the specific demands and greatest needs of the district concerned and we were furnished with much material regarding specific requirements. We do not, however, propose to refer to these in detail but merely give the result of our impressions gathered from these discussions. In such discussions we generally suggested that, as District Boards have great difficulty in maintaining existing metalled roads, and no present prospects

of substantial additional resources for the maintenance of an increased mileage of these, more attention should be devoted to earth roads. From our discussions, however, it appeared that there must be certain cases where the improvement of a district feeder road as an unmetalled road would merely result in its inducing traffic of an intensity such as to preclude its proper maintenance as an earth road, and we feel that any general improvement will of necessity require an addition to the total metalled mileage in charge, by the metalling of those lengths which by reason of the intensity of the traffic or the nature of the soil cannot be maintained as earth roads. As to the extent of this additional metalling, it is not possible to frame anything but the very roughest approximation. The demand in Moradabad district for instance amounted to an addition of some 45 miles of metalled road, in Lucknow the requirements appeared to be in the neighbourhood of 70 miles, while in Allahabad it was stated that about 150 miles of new metalled road would be required. There are in the United Provinces excluding the districts of Naini Tal, Almora and Garhwal 45 districts and demands to the above extent can scarcely be met in full, but if we assume that to meet the most urgent demands and to provide for the metalling of certain lengths of unmetalled roads which cannot be properly maintained as such, an average of only 20 miles of new metalled road per district would be required, this would mean a total of 900 miles or including new feeder roads for the East Indian Railway referred to below, say, 1,000 miles of new metalling which at a cost of, say, Rs. 10,000 per mile would amount to a total of Rs. 1 crore.

41. *Feeder Roads suggested by the East Indian Railway.*—In many cases the railway stations are deprived of their links with the existing road system and the East Indian Railway has furnished us with a note giving the particulars of those which, they consider, would assist in the development of railway traffic. We reproduce this note as Appendix 2 and reference to it shows that in some cases new roads are required ; in others roads exist but are so badly maintained as definitely to restrict traffic to and from the railway. The East Indian Railway gives cases where the bad maintenance of feeder roads leading to the railway stations has resulted in feeder bus services being withdrawn from such roads and the buses being employed in competitive services on neighbouring trunk roads parallel with the Railway. Such cases are, the feeder roads between Phaphund and Auriya, Bindki Road, and Sarsaul, and Khaga and Kishenpur. Another feeder road so badly maintained as to be a hindrance to traffic is that from Rikhikesh station to Rikhikesh town, a distance of 2 miles. The railway has asked the District Board to repair this road, but the District Board contend that as it would be used solely for railway traffic, its maintenance is a matter for the railway. Owing partly to the bad condition of this road the public use the road motor service between Rikhikesh and Hardwar in preference to the railway.

The total length of feeder roads which the E. I. Railway suggest should either be repaired or constructed amounts to about 275 miles.

42. *Feeder Roads and the B. and N.-W. Railway.*—The Agent of the B. and N.-W. Railway informed us that on the whole his railway was well off in regard to feeder roads which were usually not in such a bad state of maintenance as to render them unsuitable for agricultural traffic. He informed us that in some cases, where a lead was short, the Railway Administration, when constructing a new line, had spent a certain amount of money in connecting railway stations with the adjacent road system. There was no such connection over a mile long but the principle of constructing them at the expense of the railway has been followed even at some stations on the Tirhoot State Railway.

43. *Short roads to villages.*—In addition to specific feeder roads, it is clear that there are also a number of large villages which are not served by any road maintained by public authority. To connect all villages having a population of 1,000 and over with the road system by, say unmetalled, bridged, and drained roads 20 ft. wide, would cost a very large sum of money and it is a question to what extent the absence of easy access to the nearest district road is a serious desirability. On the one hand it was alleged that after any harvest the fields are bare and dry and the country cart can travel over them just as well as on any road and so reach the district road; on the other hand we heard that in certain cases the absence of a road constituted a serious disability. We can only say that it would appear that, when any comprehensive programme of future development is drawn up, the question of bringing the more important villages actually into serviceable contact with the district road system should not be lost sight of.

44. *Maintenance of Railway feeder roads and links with villages.*—Apparently difficulty arises in maintaining links and feeders connecting railway stations and villages with the road system, and we suggest that to ensure efficiency of maintenance, such roads, up to a distance, say, of five miles should be placed in charge of the authority responsible for the parent road and should be regarded as part of that road.

45. *General improvement of unmetalled roads.*—Finally it appears to be generally conceded that the improvement of unmetalled roads and their maintenance to a standard very considerably above that now prevailing is not only possible but highly desirable in the interests of improved rural communications generally. It is also being more fully realised that until road authorities are placed in possession of very much greater resources than has been the case in the past, the improvement of communications generally must be looked for in the relatively cheap direction of unmetalled roads and that there is a definite limit to the mileage of metalled roads which can be maintained, which limit in existing financial circumstances has already apparently been reached. Including the provision of new unmetalled feeder roads to villages as discussed in the previous paragraphs we would suggest that an all round improvement of rural communications will require a bold and vigorous policy of improving unmetalled roads and that it might be for serious consideration that of the 27,600 miles of unmetalled roads already in existence a definite programme of improving, say, 15,000 miles of these in 10 years

including the provision of minor bridges and causeways should be contemplated. The cost of this improvement we would roughly put at an average of Rs. 1,000 per mile including minor culverts and drainage, *i.e.*, a total of Rs. 1½ crores.

46. *Major bridges.*—Finally there is the question of major bridges to which we have referred in Chapter II on General Conditions. There appears to be no limit to the sums that could be invested in bridges but we are quite unable to suggest the degree of priority that would be assigned to such works. We feel, however, that in any consistent plan of development such as we have endeavoured to sketch bridging at a cost of not less than Rs. 1 crore might find a place.

47. *Total cost.*—The programme might therefore take some such shape as :—

	Rs. crores.
1. Reconstructing existing kankar roads	3
2. New metalled roads	1
3. General improvement of unmetalled roads . . .	1½
4. Bridging	1
TOTAL .	6½

The additional liability for maintenance including the increased provision necessary for existing metalled roads would have to be calculated when the programme assumed sufficiently definite shape.

48. *Conclusion.*—We feel that apology is needed for our attempt to forecast the probable early needs in road development on the strength of a tour of a couple of week's duration and a few discussions and interviews, all the more because the attempt was an afterthought, taken up when we had left the province with the understanding that no programme of future development could be discussed. We do not claim for the process by which we have reached the figure of Rs. 6½ crores that it can be regarded as anything so definite even as a first rough approximation to a programme and we are only too well aware that our various figures of cost have merely been guessed. But we feel that if our rapid skeleton survey is to fulfil its object of furnishing a bird's-eye view of the present position and possible future developments, then it must include some figure, if possible in respect of every province, of the order of the expenditure necessary to advance the road system a definite stage further towards a consistent and well balanced whole, and some indication of the method by which the figure of expenditure has been arrived at. These are our reasons for attempting to set down a figure at all; and, to the further criticism that at the present juncture the discussion of any programme of that order would be impracticable, we would venture the reply, first that it is probably always an advantage to have an objective and an idea as to the cost of reaching it, and, secondly, that so long as programmes are framed primarily with regard to visible and probable resources in the early future, there can be no certainty as to the priority to be assigned to any particular project or even as to its being essential to the ultimate plan. But given a plan, even if apparently impossible of early achievement, a definite priority can be assigned to its parts and expenditure will be consistent.

CHAPTER VII.—SUMMARY OF CONCLUSIONS.

Chapter II.—General condition of communications.

49. (1) A large proportion of the 7,776 miles of metalled or hard surfaced roads are of water bound macadam, some 6,500 miles being of kankar. The general condition of the latter is said to be bad and to be rapidly deteriorating for want of funds (para. 4).

(2) Lack of funds has generally prevented improvement of unmetalled roads (para. 5).

(3) Recently certain District Board roads have been transferred to Provincial roads on the recommendation of the Board of Communications. This procedure has been arrested owing to financial stringency and the Board of Communications has been suspended for the same reason (para. 6).

(4) In the three years ending 1930-31 out of a total expenditure on roads of Rs. 195 lakhs, 116 lakhs or 59 per cent. has been spent on Provincial roads, whereas out of a total length of *all* roads only 10½ per cent. are Provincial; out of 7,776 miles metalled roads, 3,146 or 40½ per cent. are provincial (para. 7).

(5) The existing mesh of the railway system is fine and there is little scope for railway development, except in the area served by the B. and N.-W. Railway. 40 per cent. of the metalled roads are parallel with railways (para. 8).

(6) A large number of major bridges will eventually be required to link up the road system (para. 9).

(6-A.) It appears that the saving in the cost of agricultural transport over good roads as compared with bad roads may amount to about 20 per cent. in the case of a metalled road and some less figure in the case of a good unmetalled road. It appears that there are a number of villages of 1,000 population and over which are not on any public road, and we suggest that in any scheme of comprehensive development this aspect will have to be considered. (Paras. 9-A and 9-B.)

Chapter III.—Existing state of motor competition with Railways in the United Provinces.

(7) The principal Railways serving the United Provinces are the East Indian and the B. and N.-W. R. (paras. 10 and 11).

A.—*East Indian Railway.*

(8) 17 per cent. of the metalled roads in the United Provinces run side by side with E. I. Railway main line or its branches and the Railway has suffered considerable losses in passenger revenues due to bus competition (para. 12).

(9) The East Indian Railway reports serious decreases in 3rd class passenger earnings (especially short-distance passenger earnings), prior

to the trade depression which was not substantially felt until 1930-31 (paras. 13 and 14).

(10) No accurate estimate of the losses sustained by the East Indian Railway on account of motor competition is possible, but there are grounds for thinking that the railway is losing about 31 lakhs per annum; of this figure about 22 lakhs is due to bus services in the United Provinces (para. 15).

(11) While motor bus competition is generally confined to short-distance passenger traffic, there are signs that it may extend its range of activity (para. 16).

(12) Motor transport is beginning to be employed for goods traffic, although this has not developed at present to any appreciable extent. The E. I. Railway was unable to give an estimate of losses on this account (para. 17).

(13) The E. I. Railway is meeting motor competition, even for short-distance passengers, by the use of Sentinel coaches; light trains; cheap return tickets; and more suitably timed local trains. Halts have been arranged between stations to serve intermediate villages and passengers picked up at such places are furnished with tickets by the guard (para. 18).

B.—*B. and N.-W. Railway.*

(14) The B. and N.-W. Railway reports that buses are plying over about 500 miles out of 760 miles of metalled roads parallel with the Railway, but the competition is on a limited scale which the Railway accounts for by (*a*) low mileage rate (2½ pies) over the Railway for 3rd class passengers, (*b*) poor maintenance of some of the roads running parallel with the Railway, and (*c*) the more conservative habits of the people in the area served by the B. and N.-W. Railway (para. 19).

(15) The B. and N.-W. Railway can furnish no accurate estimate of the losses due to motor bus competition, but the Agent considers the Railway is not losing more than 5 lakhs a year (para. 20).

C.—*North Western Railway.*

(16) The N. W. Railway is suffering from acute motor competition between Delhi and Muzaffarnagar. These competitive services were being re-examined and reported on at the time of our visit and the report was not to hand (para. 21).

(17) The E. I. Railway complains of the unfair incidence of the pilgrim and terminal taxes on passenger traffic and terminal taxes and octroi on goods, parcels, etc. The matter has been reported to the Road Taxation Committee and that Committee has recommended that arrangements should be made, if possible, to spread the burden of this taxation more fairly between rail and road traffic (paras. 22 and 24).

(18) The B. and N.-W. Railway definitely oppose pilgrim taxes as being a check on traffic and out of all proportion to the services rendered para. 23).

Chapter IV.—Motor Transport in the United Provinces, its Taxation and Regulation and Proposals for the Future.

(19) A Road Traffic Taxation Committee was appointed by Government before our enquiry started and we were permitted to see their draft report. This Committee has recommended the establishment of Traffic Control Boards, and this and other recommendations of this Committee, if given effect to, will, we think, tend to remove the objections of Railways that motor competition has hitherto often been unfair (paras. 25 to 28).

(20) Over-crowding of motor buses is a frequent evil, especially in the Moradabad District, where apparently the Police find it difficult to prevent. Over-crowding is very frequent in Lucknow and Gorakhpur. Drastic steps are being taken to check it (para. 29).

(21) We find a considerable weight of opinion in favour of stricter control of buses as regards limitation of number plying over a route, limitation of range of motor buses competing with Railways, and publication of time tables (para. 30).

(22) We found a certain weight of opinion in favour of monopolies and we think that whether subsequent development takes the form of controlled monopolies or not, the concentration of motor transport in the hands of reputable companies will be a benefit to the public. It will also enable railways to co-operate with such concerns (para. 31).

(23) We found considerable difficulty in ascertaining the number of registered buses plying daily in the United Provinces. There was a good deal of evidence of unemployment among buses but it varied in intensity between one District and another. We think there is need for a more regular check on this traffic (para. 32).

(24) From the information given to us we are of opinion that the permits by Districts to ply for hire in Districts give rise to difficulties. If the Divisional Traffic Boards recommended above are created, they might issue the permits (para. 33).

Chapter V.—Branch Line Projects.

(25) Some years back the E. I. Railway had an extensive programme of new lines in the United Provinces. The Administration agrees that these will all have to be reconsidered in the light of the development of motor transport and some of the shorter branch lines should be definitely abandoned in favour of roads (para. 36).

(26) The B. and N.-W. Railway also have an extensive programme of projected railways in the Provinces, but in contrast to the E. I. Railway, consider that the majority of these would become a paying proposition owing to the cheaper construction of metre gauge lines. The Railway Company is only prevented from incurring the necessary capital outlay owing to the option the Government of India have of purchasing the Company's property at an early date (para. 36).

Chapter VI.—Programme of Future Road Development.

(27) There is no programme of future road development in existence in the United Provinces, but the views of District Officers, Chairmen of District Boards, etc., show that improved communications will be demanded when finances recover (paras. 37 and 38).

(28) We gathered that about half the metalled roads in the Provinces, now maintained by kankar, cannot support the traffic. The first consideration would therefore be reconstruction of these roads (say 4,000 miles) in some more durable material. At Rs. 7,500 per mile, this would require 3 crores, and substantial additional provision for maintenance (para. 39).

(29) There is an urgent need for new metalled feeder roads in the Districts we visited. In Moradabad 45 miles, in Lucknow 70 miles and in Allahabad 150 miles. As an aggregate average for all Districts about 1,000 miles would probably be required, which, at Rs. 10,000 a mile, would require one crore. This would include about 100 miles required by the East Indian Railway (para. 40).

(30) The East Indian Railway has given us a list of feeder roads which either require to be put in a proper state of maintenance or constructed. The total mileage involved is about 275 (Appendix 2) (para. 41).

(31) The B. and N.-W. Railway had no specific demands to make for feeder roads and the Agent informed us that in some cases the railway had undertaken the construction of short feeder roads itself (para. 42).

(32) A number of large villages with population of 1,000 and over are at present unconnected with the road system and in any programme of future road development this should not be lost sight of (Appendix 1) (para. 43).

(33) Difficulty arises in connection with maintaining links and feeder roads and we suggest that to ensure maintenance such roads be placed in charge of the authority responsible for the parent road (para. 44).

(34) Improvement of unmetalled roads is highly desirable, 27,600 miles exist. A definite programme of improving 15,000 miles in 10 years should be contemplated. The cost of this at Rs. 1,000 a mile would be $1\frac{1}{2}$ crores.

(35) We consider that provision must be made in any programme for the construction of major bridges (*see* para. 36).

(36) The cost of the programme suggested above is as follows :—

	Rs. crores.
1. Reconstructing existing kankar roads	3
2. New metalled roads	1
3. General improvement of unmetalled roads . . .	$1\frac{1}{2}$
4. Bridging	1
Total .	$6\frac{1}{2}$

(Para. 47)

(37) We have framed the programme because we think it desirable to provide a figure for each province in order to give a bird's-eye view of the present position and a possible basis on which to work out a scheme of balanced development in the future (para. 48).

APPENDIX 1 (*see* para. 8).

Particulars regarding communications in the area having a density of population exceeding 100 per square mile. That is excluding Almora, Garhwal and Naini Tal.

Area	93,000 Sq. miles.
Population	47,014,290
Average density	506 per square mile.

*Roads and Railways.**

——	Length in miles.	Length per 100 Sq. miles of area.	Area per mile of road or railway. Sq. miles.	Persons per mile of road or railway.
1. Railways	4,952	5·32	18·80	9,500
2. Metalled Roads . . .	7,630	8·20	12·20	6,160
3. Improved or motorable unmetalled roads (fair weather).	..	..	..	..
4. Total motorable roads . .	7,630	8·20	12·20	6,160
5. Other unmetalled roads, say .	25,000	26·90	..	..
6. Total all roads, say . .	32,600	35·00	2·85	1,450

The area more than 10 miles from any railway line is 25,109 Sq. miles or 28 per cent. of total.

* *N.B.*—There are no railways in the excluded districts. As regards roads the mileage of metalled roads in the excluded districts is known and has been deducted from the total. No figures are at present available for unmetalled roads in these districts, a deduction of 2,600 miles has been guessed at as an approximation.

APPENDIX 2.

Railway Feeder Roads required by the East Indian Railway to be constructed or improved.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
1	Benares . . .	Babatpore . . .	Inter-Provincial Road No. 8 between Benares-Jaunpur.	2½	New railway feeder road required to connect railway station with main road.	
2	Ditto . . .	Khalispore . . .	Ditto .	1½	Ditto	
3	Ditto . . .	Chaukhandi . . .	Sultanpore on Benares-Azamgarh metalled Road.	5	It will be an important feeder . . .	District Board.
4	Allahabad . . .	Sarai Akail . . .	Chail	5	A portion of the road between Sarai Akail and Manauri is very bad during rainy season. If this section is metalled it will develop the Manauri grain traffic.	
5	Fatehpur . .	Khaga . . .	Hathgaon . . .	6	These proposed feeder roads should connect with the Local unmetalled road and Daranagar-Hussainganj. Traffic in seeds and grain is at standstill during rainy season.	
6	Ditto . . .	Ditto . . .	Airwansadat . .	5		
7	Ditto . . .	Ditto . . .	Khakhriru . . .	10	This is an important feeder and will connect with the Jamuna. The road to be metalled and temporary bridges made permanent.	
8	Ditto . . .	Ditto . . .	Kissenganj . . .	1	The condition of the approach road to the Ry. station and the town which it serves is so bad that the feeder bus service which previously terminated at the station operate as far as Cawnpore and Fatehpore over the Grand Trunk Road No. 2.	District Board.
9	Ditto . . .	Bindki Road . .	Bindki Town . .	5	The condition of the approach road between this station and the town which it serves has led to the feeder bus service which previously terminated at the railway station operating along the Grand Trunk Road to Cawnpore in competition with the railway. This approach road requires immediate improvement.	District Board.

					In rainy season carts pass with difficulty and they go through to Cawnpore since the difficult portion of the journey is completed. By improving the approach road more trips by carts will be made to Bindki Road. This will lead to increased traffic.	District Board.
10	Cawnpore . . .	Sarsaul . . .	Narwal . . .	1	Same remark as in case of item 9 . .	District Board.
11	Etawah . . .	Phaphund . . .	Auriya Tahasil . .	13	Metalled, condition extremely bad. This should be a Provincial Road being an important railway feeder. The condition of the road has resulted in a serious decline of the grain traffic dealt with at Auriya and diversion of traffic to the G. I. P. Railway. Moreover, a scheme for a co-ordinated road and rail service in conjunction with this railway is held up on account of the bad condition of the road.	District Board.
12	Mainpuri . . .	Kaurara . . .	Sirsaganj . . .	4	New road required. In the absence of a feeder road people take buses from Sirsaganj mart for Shikohabad in the up direction and in down direction to Etawah. A feeder road will help to increase the traffic of Kaurara station.	District Board.
13	Muttra . . .	Jaleswar Road . .	Unchagaon . . .	1½	New road required. In the absence of a feeder road traffic is carted to B., B. & C. I. Ry. at Kasganj. Traffic in rose water, potatoes and in Agricultural produce will increase.	
14	Ditto . . .	Ditto . .	Barwanna *vid* Dohilu, Udhania and Bauli.	9	Cart track on both ways are impassable. In the absence of a proper feeder road traffic is carted to Muttra, Hathras, Agra, etc.	District Board.
15	Ditto . . .	Ditto . .	Jaleswar Town . .	6	The road connecting this station with the town is badly neglected and needs to be repaired.	District Board.
16	Aligarh . . .	Hathras Jn. . .	Hathras City . .	5½	Ditto .	District Board.
17	Bulandshahr . .	Khurja Jn. . . .	Khurja City . .	4	Ditto .	District Board.

APPENDIX 2.

Railway Feeder Roads required by the East Indian Railway to be constructed or improved.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
1	Benares . . .	Babatpore . . .	Inter-Provincial Road No. 8 between Benares-Jaunpur.	2½	New railway feeder road required to connect railway station with main road.	
2	Ditto . . .	Khallspore . . .	Ditto .	1½	Ditto	
3	Ditto . . .	Chaukhandi . . .	Sultanpore on Benares-Azamgarh metalled Road.	5	It will be an important feeder . . .	District Board.
4	Allahabad . . .	Sarai Akail . . .	Chail	5	A portion of the road between Sarai Akail and Manauri is very bad during rainy season. If this section is metalled it will develop the Manauri grain traffic.	
5	Fatehpur . .	Khaga . . .	Hathgaon . . .	6	These proposed feeder roads should connect with the Local unmetalled road and Daranagar-Hussainganj. Traffic in seeds and grain is at standstill during rainy season.	
6	Ditto . . .	Ditto . . .	Airwansadat . .	5		
7	Ditto . . .	Ditto . . .	Khakhriru . . .	10	This is an important feeder and will connect with the Jamuna. The road to be metalled and temporary bridges made permanent.	
8	Ditto . . .	Ditto . . .	Kissenganj . . .	1	The condition of the approach road to the Ry. station and the town which it serves is so bad that the feeder bus service which previously terminated at the station operate as far as Cawnpore and Fatehpore over the Grand Trunk Road No. 2.	District Board.
9	Ditto . . .	Bindki Road . .	Bindki Town . .	5	The condition of the approach road between this station and the town which it serves has led to the feeder bus service which previously terminated at the railway station operating along the Grand Trunk Road to Cawnpore in competition with the railway. This approach road requires immediate improvement.	District Board.
					In rainy season carts pass with difficulty and they go through to Cawnpore since the difficult portion of the journey is completed. By improving the approach road more trips by carts will be made to Bindki Road. This will lead to increased traffic.	District Board.
10	Cawnpore . . .	Sarsaul . . .	Narwal . . .	1	Same remark as in case of item 9 . .	District Board.
11	Etawah . . .	Phaphund . . .	Auriya Tahasil . .	13	Metalled, condition extremely bad. This should be a Provincial Road being an important railway feeder.	District Board.
					The condition of the road has resulted in a serious decline of the grain traffic dealt with at Auriya and diversion of traffic to the G. I. P. Railway. Moreover, a scheme for a co-ordinated road and rail service in conjunction with this railway is held up on account of the bad condition of the road.	
12	Mainpuri . . .	Kaurara . . .	Sirsaganj . . .	4	New road required. In the absence of a feeder road people take buses from Sirsaganj mart for Shikohabad in the up direction and in down direction to Etawah. A feeder road will help to increase the traffic of Kaurara station.	District Board.
13	Muttra . . .	Jaleswar Road . .	Unchagaon . . .	1½	New road required. In the absence of a feeder road traffic is carted to B., B. & C. I. Ry. at Kasganj. Traffic in rose water, potatoes and in Agricultural produce will increase.	
14	Ditto . . .	Ditto . .	Barwanna *vid* Dohilu, Udhania and Bauli.	9	Cart track on both ways are impassable. In the absence of a proper feeder road traffic is carted to Muttra, Hathras, Agra, etc.	District Board.
15	Ditto . . .	Ditto . .	Jaleswar Town . .	6	The road connecting this station with the town is badly neglected and needs to be repaired.	District Board.
16	Aligarh . . .	Hathras Jn. . .	Hathras City . .	5½	Ditto .	District Board.
17	Bulandshahr . .	Khurja Jn. . . .	Khurja City . .	4	Ditto .	District Board.

APPENDIX 2—*contd.*

Railway Feeder Roads required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
18	Bulandshahr . .	Dankaur Ry. station .	Sikandrabad . .	4	The road connecting Dankaur station with Sikandrabad is in very bad condition and has led to a diversion of both goods and passenger traffic to and from Ghaziabad and Delhi to direct road service. The entire road needs to be repaired. The road between Dankaur station and Dankaur is also in bad condition.	District Board.
19	Ditto . . .	Dibai	Anupshahr . . .	16	At present a metalled road connects Dibai station with Anupshahr passing through Dibai town, Bhimpur and Makhana. The condition of this road is most unsatisfactory beyond Bhimpur. Repairing of this road is essential. The improvement of this road will increase both inward and outward goods traffic.	District Board.
20	Jaunpore . . .	Jalalganj . . .	To connect inter-provincial road No. 8 between Jaunpore and Badshapur.	¾	Railway feeder road. A new road is required.	
21	Ditto . . .	Mihirawan . . .	Ditto . .	1¾	Railway feeder road requires thorough overhauling.	District Board.
22	Ditto . . .	Haripalganj . . .	To connect Jaunpore-Singramau Road.	¼	Proposed Ry. feeder roads. In respect to 22 and 23 competitive bus services will be checked and Ry. traffic of Haripalganj and Srikrishnanagore will improve.	
23	Ditto . . .	Srikrishnanagore . .		⅞		
24	Ditto . . .	Bakhsam . . .		⅛		
25	Sultanpore . . .	Amethi . . .	Bisseswarganj . .	4	From the Railway level crossing gate to Bisseswarganj the road is kutcha and requires metalling as in the monsoons carts experience great difficulty in reaching the station.	District Board.
26	Ditto . . .	Lambhua . . .	Sultanpore-Zafrabad unmetalled Road.	¼	New road. Ry. feeder road is necessary on the newly opened section of the E. I. Ry. between Zafrabad and Lucknow.	
27	Ditto . . .	Maharani Pachim . .	Ditto .	¼	Ditto.	
28	Ditto . . .	Nihalgarh . . .	Sultanpore-Haidergarh-Lucknow unmetalled Road.	¼	Ditto.	
29	Ditto . . .	Warisganj Halt . .	Ditto .	¼	Ditto.	
30	Ditto . . .	Mussafirkhana . .	Ditto .	¼	Ditto.	
31	Ditto . . .	Manyari . . .	Ditto .	¼	Ditto.	
32	Partabgarh (Oudh) .	Kairani Pachim . .	Sultanpore-Zafrabad unmetalled Road.	¼	New Railway feeder roads are required for the free movement of traffic. At present there are no railway feeder roads.	
33	Ditto . . .	Kairipur . . .	Ditto . .	1¼		
34	Fyzabad . . .	Kurebhar . . .	Inter-Divisional Road No. 11 Allahabad-Fyzabad Road.	¼	Ditto.	
35	Ditto . . .	Khajur Hat . . .		¼	Ditto.	
36	Ditto . . .	Malethukanar . .		¼	Ditto.	
37	Ditto . . .	Bharat Kund . .		¼	Ditto.	
38	Ditto . . .	Mashoda . . .		¼	Ditto.	
39	Ditto . . .	Salarpore . . .	Inter-Divisional Road No. 9 Lucknow-Fyzabad Road.	¼	No Ry. feeder roads are available for the free movement of passengers and goods. New roads are required.	
40	Ditto . . .	Sohawal . . .		⅞		
41	Ditto . . .	Baragaon . . .		1¼		
42	Ditto . . .	Fyzabad . . .	Milkipur . . .	20	The road up to Rani a distance of 7 miles is metalled and the rest is unmetalled which if made pucca will serve important places *en-route* and will lead to improvement of traffic.	District Board.
43	Rae Bareli . . .	Dalmau . . .	Munshiganj . . .	6	Railway feeder road is necessary. A new road should be constructed.	
44	Ditto . . .	Fursatganj . . .	Fursatganj village .	1	Existing unmetalled Ry. feeder road requires metalling.	District Board.
45	Ditto . . .	Rupamau . . .	Rupamau village . .	1	No Ry. feeder road is available. A new Ry. feeder road is required.	

Railway Feeder Road required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
46	Rae Bareli . . .	Inhauna . . .	Sultanpur-Haidergarh-Lucknow unmetalled road.	½	A Ry. feeder road is essential. A new road to be constructed.	
47	Barabanki . . .	Tribeniganj Hat . .	Ditto .	½	Ditto.	
48	Ditto . . .	Haidergarh . . .		1		
49	Ditto . . .	Patranga . . .	Inter-Divisional road No. 9 between Lucknow-Fyzabad.	3½		
50	Ditto . . .	Bhilwal . . .	Bhilwal village . .	1½	The existing roads are kutcha and in very bad condition. It is not passable during rains.	District Board.
51	Ditto . . .	Ditto . . .	Ramnagar . . .	5		
52	Ditto . . .	Rudauli . . .	Rezaghat . . .	11	The road to Rezaghat is unmetalled and there is no bridge over the Gumti. Loaded carts are ferried by means of boats. If this road is improved the traffic of Sukulbazar which is about 2 miles from Rezaghat will also be served. A bridge over the Gumti will facilitate free movement of traffic.	District Board.
53	Ditto . . .	Ditto . . .	Rudauli and Aminganj market.	4½	There is a metalled road from Rudauli station to Rudauli market, a distance of 1½ miles, but the road between Rudauli market and Aminganj market is unsuitable. If this portion is improved, the cartage will be decreased and consequently more traffic will flow to this station.	District Board.
54	Lucknow . . .	Harauni . . .	Hassanganj . . .	7	The feeder road from Harauni to Hassanganj town of district Unao is unmetalled. The metalling of this road will lead to the establishment of buses between Hassanganj and Harauni which would charge about As. 3 per passenger against As. 7 between Hassanganj and Ajgain in the absence of any road parallel to the Ry. line at this point, the passengers will have to avail of the railway service which offers frequent train connections. As the trend of traffic will be towards Unao, the lead between Harauni and Ajgain will be a gain to the Ry.	District Board.
55	Ditto . . .	Harauni . .	To be connected with the Inter-provincial Road No. 4 Lucknow-Cawnpore Road.	5	Existing unmetalled road to be metalled .	
56	Ditto . . .	Malhair . . .	To be connected with the Inter-Divisional Road No. 9 Lucknow-Fyzabad Road.	1½	New Railway feeder roads are required.	
57	Ditto . . .	Jugaur . . .	Ditto .	1		
58	Ditto . . .	Amausi . . .	To be connected with the Inter-provincial Road No. 4 Lucknow-Cawnpore Road.	2½		
59	Ditto . . .	Utratia . . .	To be connected with the Inter-Divisional Road No. 8 Lucknow-Bareilly.	2	Ditto.	
60	Ditto . . .	Anupganj . . .	To be connected with the unmetalled Road Sultanpur-Haidargarh-Lucknow.	½	Ditto.	
61	Ditto . . .	Rahamatnagar . .	Ditto .	½		
62	Ditto . . .	Fort Saleempur . .	Ditto .	½		
63	Unao	Sonik	To be connected with the Inter-provincial Road No. 4 Lucknow-Cawnpore Road.	½	Ditto.	
64	Ditto	Magarwara . . .	Ditto .	½		
65	Ditto	Jaitipur . . .	Mathrikhera . .	4	New railway feeder road is required to be constructed.	
66	Ditto	Bighapur . . .	Magrayar . . .	2	A new feeder road should be constructed as there is no road communication between the said points.	

APPENDIX 2—*contd.*

Railway Feeder Road required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
67	Unao	Ganj-Moradabad	Ganj village	1½	The existing pathway is full of sand and is never looked after. Carts ply with difficulty. Goods traffic originating from Ganj, an important village, flows to Cawnpore by carts, as the carts charge 9 pies per maund in dry season and 1 anna per maund in monsoon. The construction of this road will increase the goods traffic of this station and will stop the cart traffic to Cawnpore.	
68	Ditto	Purwa through Baiswara station.	Bhagwantnagar	18	The road from Baiswara to Bhagwantnagar is unmetalled and absolutely without repair. The passengers from Parwa now travel by buses to Unao and are charged Re. 1 each instead of coming to Baiswara and then availing of the Railway service. The passenger traffic from Bhagwantnagar as well as brassware traffic will improve.	District Board.
69	Hardoi	Palli (Anjhi)	Sahabad	10	There is a metalled road between Anjhi and Sahabad, 2½ miles and beyond this to Palli is unmetalled, besides, the River Garra is unbridged, which is about 100 yds. wide. At present only a fraction of merchandise traffic of Palli is dealt with at Anjhi as will also divert the cart traffic moving to Farukhabad.	District Board.
70	Ditto	Sandila	Sandila village	7	These kutcha roads require metalling. The road No. 72 is impassable during rainy season, though Hathya Haran is an important pilgrim centre and with the improvement of these roads feeder bus services will spring up as well as the goods traffic of Hardoi will be greatly increased.	District Board.
71	Ditto	Ditto	Bharawan	16		
72	Ditto	Ditto	Hathya Haran	10		
73	Moradabad	Bijohi	Islamnagar	7	Existing kutcha road to be metalled which will facilitate the movement of passenger and goods traffic. Islamnagar is an important village and as good trade exists between Bijohi and Islamnagar an improved road is essential.	District Board.
74	Ditto	Sambhal Hatimserai	Sambhal Hatimserai Town.	3	Railway feeder road between these points requires improvement.	District Board.
75	Bijnor	Muazaampur Narain	Connects with the Najibabad-Bijnor unmetalled road.	⅛	Condition of the approach road is very bad and requires improvement.	District Board.
76	Dehra Dun	Rikhikesh station	Rikhikesh Town	2	The road from Rikhikesh station to the town is in a deplorable condition. The District Board contend that since this road is a "feeder" road its maintenance is a matter for the railway. It is stated that owing to the condition of the road, the public use the road motor services in preference to the railway.	District Board.
77	Saharanpur	Landhaura	Manglaur	4	The bulk of the traffic booked from this station originated at Manglaur, about 4 miles away. The road between Manglaur and Landhaura is unmetalled and is impassable during monsoon.	District Board.

SUPPLEMENT.

As already recorded in the footnote on page 7, we were unable to obtain information from the G. I. P. and B., B. & C. I. Railways regarding the effects of motor competition, etc., on those portions of the two railways serving the United Provinces until after our visit to Bombay towards the end of our tour. We accordingly record in the accompanying Supplement the information given us by these two railways relating to the United Provinces.

A.—G. I. P. RAILWAY.

The G. I. P. Railway reports the following bus services running in competition with the railway in the southern districts of the United Provinces served by the railway.

Statement of bus traffic and earnings.

Sections.	Milage by road.	No. of buses in operation.
Muttra-Kosi Kalam	24	10
Agra-Muttra	36	24
Dholpur-Agra	35	20
Agra-Bah	43	20
Jhansi-Punch	42	6
Kunch-Orai	19	6
Orai-Kalpi	21	6
Kalpi-Pokhrayan	9	2
Pokhrayan-Cawnpore	39	16
Jhansi-Mauranipur	40	4
Mahoba-Hamirpur	52	4
Cawnpore-Hamirpur	40	15
Banda-Attara	20	6
Mauranipur-Karwi	18	2
Jhansi-Lalitpur	53	2
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The railway has worked out the losses due to these buses on the same basis as has been taken for the Central Provinces and the Bombay Presidency. This method is as follows:—

It has been roughly estimated that all the competitive buses running within the sphere of influence of the railway carry 4,370,400 passengers a year and the approximate earnings therefrom amount to Rs. 27,34,900. The G. I. P. Railway considers that from this a 25 per cent. deduction should be made on account of passengers now using buses who formerly travelled by country carts, and on account of new traffic created by the buses themselves. This would reduce the above earnings to Rs. 20,51,168.

To check this figure as far as possible, the G. I. P. Railway has next taken the comparative passenger earnings on the railway for the years 1927-28, the last year before intense motor competition, and 1930-31. These figures are as follows and the decrease in 1930-31 is given:—

—	Passengers.	Earnings.
		Rs.
1927-28	42,023,207.	3,53,28,211
1930-31	34,952,109	2,85,82,699
	7,071,098 or 16%	67,45,512 or 19%

Figures were then taken out of traffic on certain sections unaffected by motor competition for the years 1927-28 as compared with the years 1930-31, and it was found that the decrease in numbers on these sections was 9 per cent. and in earnings 13 per cent., and these decreases, it was assumed, were due to trade depression. The railway therefore considers it reasonable to assume that the decrease of 19 per cent. in the total third class earnings is made up of 13 per cent. due to trade depression and 6 per cent. due to motor competition. 6 per cent. of Rs. 3,53,28,211 is Rs. 21,19,692 and this figure does not differ appreciably from Rs. 20,51,168 based on the check made on competitive bus services.

Of this figure the G. I. P. state that Rs. 4,13,265 represents the loss incurred in the United Provinces and Rs. 67,290 to bus services plying in the Punjab.

Measures adopted by the G. I. P. Railway to meet motor bus competition.—The G. I. P. Railway reports that motor competition in the United Provinces has been felt intensely on the Agra-Bah branch alongside which a metalled road runs parallel practically for the whole distance. The speed of the trains on the branch has been increased and a reduction has been made in 3rd class tickets. Cheaper tickets have also been introduced between other important points served by the railway in the United Provinces.

B.—B., B. & C. I. Railway.

The B., B. & C. I. Railway reports considerable competition on the metre gauge line running between Agra Fort, Achnera and Cawnpore. The total number of buses running parallel with the railway in this area, when the check was made in October last, amounted to 133; and the B., B. & C. I. Railway estimates the loss to the railway on account of these at Rs. 14,51,605 annually. We have no means of checking this estimate which is based on a periodical check made from time to time of the buses running, and their seating capacity; it being assumed that they carry passengers to their full capacity throughout the year. The resulting estimate is probably on the high side, assuming as it does that the bus services run throughout the year, but we are satisfied that the bus competition with the metre gauge route of the B., B. & C. I. Railway in the United Provinces is intense.

Branch Line Projects.

The G. I. P. Railway have given us particulars of certain branch lines projected in the United Provinces but we have been unable to discuss these with the local Government authorities and we therefore offer no comments on them.

Road Development in the United Provinces.

The G. I. P. Railway complains that the following roads run parallel for the most part with the railway and if improved would stimulate competition with the railway, which is already intense over certain sections.

(i) Lucknow-Cawnpore-Jhansi-Saugor Road.

(ii) Jhansi-Gwalior-Agra-Delhi Road.

The railway also states that feeder roads are required to connect the stations on the Agra-Bah branch with the towns they serve; that a road is necessary from village Jari to Jasra station; and that the Etawah (Bina) Khimlasa-Malthone road feeding Bina and Khurai *viâ* Khimlasa should be improved.

5. PUNJAB.

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PUNJAB.

CHAPTER I.—BRIEF ITINERARY.

1. *Officers deputed to accompany us in the Punjab.*—In accordance with the request of the Government of India that each Government should, if possible, spare one of its officers familiar with road problems to accompany us through the Province, the Punjab Government nominated Mr. S. G. Stubbs, O.B.E., Superintending Engineer, Second Circle, for this duty; and the North Western Railway arranged for Khan Bahadur Muzaffar Hussain, Deputy Chief Engineer, to travel with us on behalf of the North Western Railway.

2. *Places visited and persons interviewed during our tour.*—During our tour of the Punjab we travelled 920 miles by road, and 563 miles by rail. In each Public Works Department Division we were generally met by the Executive Engineer, Public Works Department, and during our journeys over District Board roads we were accompanied by the District Board Engineer.

We visited the following District Headquarters and interviewed the Deputy Commissioners who usually had with them the District Board Engineer and certain members of the District Board:—

District.	Deputy Commissioner.
Ludhiana	Mr. Connor, C.S.
Ferozepore	„ S. Partab, I.C.S.
Montgomery	„ Le Bailey, I.C.S.
Lyallpur	„ Keogh, C.S.
Gurdaspur	Khan Bahadur Bunyad Hussain, C.S.
Sialkot	Mr. Anderson, I.C.S.
Rawalpindi	„ Bradford, I.C.S.
Amritsar	„ Jenkins, I.C.S.
Lahore	„ Askwith, I.C.S.

3. While at Ferozepore we called on Mr. Homan, Divisional Superintendent, North Western Railway, and obtained his views on the questions we were investigating. Similarly at Rawalpindi we consulted Colonel Woodhouse, M.C., R.E., Divisional Superintendent of the Rawalpindi Division. We were unable to call on Rai Bahadur P. L. Dhawan, M.A., Divisional Superintendent, North Western Railway, Multan, but this Officer kindly met us at Montgomery and accompanied us throughout our tour of his Division. Mr. Glass, Divisional Superintendent,

Delhi Division, kindly visited Simla after our tour of the Punjab, to furnish us with information concerning his Division.

4. At Lahore we interviewed the following Officers of the North Western Railway :—

Mr. Highet, Agent.
,, Lockwood, Chief Operating Superintendent.
,, Chase, Chief Commercial Manager.
,, West, Deputy Commercial Manager.
,, Ogle, Senior Scale Officer, Commercial Department.
,, Bean, Divisional Superintendent, Lahore Division.

5. We further discussed the question of road development and motor competition with railways with Mr. Owen Roberts and Mr. Burbidge, respectively, Chairman and Member of the Lahore Branch of the Indian Roads and Transport Development Association. We also interviewed Sardar Makhan Singh, transport contractor who has contracts with the North Western Railway, and other gentlemen as stated in the detailed itinerary and diary of our tour of the Punjab attached as Appendix 1.

6. We should add that, prior to leaving Simla, we discussed the subjects of our enquiry with—

Mr. J. A. Ferguson, I.C.S., Commissioner, Jullundur Division,
Mr. Alan Mitchell, I.C.S., Commissioner, Lahore Division,
and Mr. D. Macfarlane, Chief Engineer and Secretary, P. W. D., Punjab Government,

and on our return we again interviewed Mr. Macfarlane, and consulted Mr. J. M. Ewait, Inspector General of Police, Punjab, on those points concerning the Police brought to our notice during our tour.

7. We take this opportunity of expressing our thanks to all the above for the ready help they have given us in assembling the facts and figures which form the basis of our report.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

8. *Communications.*—The area of the Punjab is 99,900 sq. miles and its population according to the 1931 census is 23,580,852. It has 3,314 miles of broad gauge railways, 247 miles of metre gauge and 133 miles of narrow gauge. There are 3,900 miles of metalled roads, of which 2,540 miles are provincial and 1,360 miles local, *i.e.*, in charge of District Boards. In addition to the above there are 6,040 miles of improved or motorable unmetalled roads of which 1,240 miles are provincial and 4,800 miles local.

9. *Improved unmetalled roads.*—The majority of these have been improved to their present standard during the last 3 or 4 years principally by the use of mechanical tractors and graders. Owing to financial stringency many District Boards have temporarily relaxed their efforts on these roads, but the development has been remarkable and it is clear that both District Boards and the public are now realising the possibilities and advantages of these improved unmetalled roads. This improved maintenance has necessitated the purchase of about 20 grading units by District Boards most of the important districts having at least one. At present, owing to the reasons stated rather less than half these are not working.

Given a sufficient width of land in the existing right of way and normal conditions including good soil and reasonable rainfall, initial improvement has been carried out in the average conditions in the Punjab at a cost of about Rs. 500 per mile for grading while the roads have subsequently been satisfactorily maintained at a cost of about Rs. 70 per mile per year. In connection with the improvement of these earth roads an extensive soil survey has been carried out along the principal unmetalled district roads. The length surveyed which was not particularly chosen as likely to have good soil amounted to 2,600 miles, of which, 1,650 miles were found to have excellent soil and 430 miles " fairly good," leaving some 500 miles of inferior soil or soil impregnated with saltpetre. This suggests that as far as soil is concerned, some 80 per cent. of the existing mileage of unmetalled roads in the Punjab is susceptible of improvement up to a standard in advance of that attained hitherto without any very great expense. During our tour we made a point of inspecting as many of these improved roads as we could and we found that while owing to retrenchment certain of them had been neglected for a year or more, they still represented a great improvement upon the ordinary unmetalled road previously known. We attach great importance to this development because it is clear that if feeder road facilities for agricultural marketing and rural travel are to be improved, this must be looked for to a very large extent in the improvement of unmetalled roads because the provision of hard surface upon the large mileage involved is clearly out of the question. There remain some 14,500 miles of unimproved unmetalled roads.

10. *Classification of roads in the Province.*—Roads in the Punjab were reclassified about 8 years ago as follows :—Class I, or arterial roads, which are the important main roads of the province and are improved and maintained by the Public Works Department from provincial revenues. Class II which are the principal or most important roads in each district and are maintained by District Boards with grants-in-aid from provincial revenues both for maintenance and improvement, these grants being paid as a percentage of actual expenditure, the percentage having been fixed with regard to the financial and other circumstances of each district. And Class III roads which are the less important roads of the district and are in the charge of District Boards. In addition there is an unknown length, which may amount to as much as 50,000 miles, of village roads, connecting villages with each other and with the road system, which are the property of the villagers themselves and are nominally maintained by them, but are generally in a very bad state of repair.

11. *Expenditure on roads.*—The expenditure on roads of all classes in the Punjab up to the year 1926-27 was given in the statement D at page 94 of the report of the Indian Road Development Committee. The most recent figures available for all roads are in respect of the year 1929-30 and are as follows :—

——	Original works.	Repairs.	Total.
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	24·18	51·68	75·86
Local	4·67	18·01	22·68
TOTAL .	28·85	69·69	98·54

Of the local expenditure in that year a sum of Rs. 1·59 lakhs in the case of original works and 6·18 lakhs in the case of repairs or a total of Rs. 7·77 lakhs was contributed in the form of grants-in-aid to District Boards from provincial revenues as explained above. The total expenditure was thus :—

——	Construction.	Maintenance.	Total.
Provincial	25·76	57·86	83·62
Local	3·08	11·84	14·92
TOTAL .	28·84	69·70	98·54

There is a considerable mileage of metalled road parallel with railways, a large proportion of which existed before the railway was built. In the whole of the province out of a total of 3,900 miles some 1,400 miles or 36 per cent (say roughly one-third) are parallel with railways and within 5 miles of them.

It appears from the above figures that in recent years the provincial expenditure upon roads has amounted to about 85 per cent of the total expenditure, and in view of the fact that less than 4,000 miles out of the total mileage of some 24,000 is in direct charge of the provincial Government, it would appear that the development and maintenance of provincial roads has greatly outstripped that of District Board roads. Indeed a general survey of the position brings out very clearly the lack of balance which has come about in the development of the road system owing to the vigorous policy prosecuted in the development or improvement of roads by the local Government as compared with the apparently inadequate efforts of local bodies. We are concerned with the broad aspect of roads and railways regarded as a single entity rather than as a disjointed collection of facilities of different classes provided and maintained by different authorities. Accordingly in any proposals which we may have to make, while regard will be given to the existing classification in order to make our suggestions clear, we feel that the limitations imposed by the existing administrative classification should, in considering any comprehensive scheme of development, be temporarily set on one side.

12. *Communications and area and population served.*—In order to be able to compare the conditions as regards communications in different provinces upon some uniform basis unaffected by the presence or absence of large waste of forest areas, it is proposed to present certain statistics upon the basis of the area and population of these districts in each province which have a density of population including that of large cities of not less than 100 per sq. mile. In Appendix 2 attached will be found certain particulars for the Punjab for the area comprised by such districts. It will be seen that the average density of population over the whole of that area is 290 per sq. mile, that the area served by one mile of railway is on the average 22 sq. miles, and that the area served by a mile of metalled or motorable unmetalled road is 8·33 sq. miles. Thus the mean condition is that for each railway there is a belt of country 11 miles wide on each side which has to be served by road and that for each motorable road there is a belt of country a little over 4 miles wide on each side. It will further be seen that, taking the gross mileage of all roads in this area, each mile of road is required to serve an area of 3·42 sq. miles, or in other words, has a belt of country 1·7 miles wide on each side of it and it is clear that if the majority of the existing mileage could be improved up to a standard approximating to that reached by the unmetalled roads which have already been improved, the province would have an extremely good road system.

To revert for a moment to the question of railways, a belt of 10 miles on each side of every existing railway has been shown on the provincial

map leaving certain areas which are more than 10 miles from any railway. These areas have been measured and it is found that in the total area of 73,000 sq. miles, with which we are dealing, the area which is more than 10 miles from any railway amounts to 19,000 sq. miles or only 26 per cent. of the total. Having regard to the general circumstances of the province, it is clear that the existing railways in all but the sparsely populated, desert, or mountainous tracts have a relatively small mesh and that there can at present be no great scope for additional branch lines. It also emerges from these figures, that trunk roads even when at right angles to railways must inevitably provide short circuiting routes as compared with railways, that there is no necessity for any development of the nature of constructing entirely new roads is outlying undeveloped country, and that the requirements are principally or wholly in the direction of developing the existing road system by improvement and bridging on a rational basis so as to serve at once the requirements of agricultural marketing and the ordinary needs of travel.

13. *Present state of metalled roads.*—A word is necessary as to the present condition of metalled roads and the progress recently made with their improvement by surface treatments.

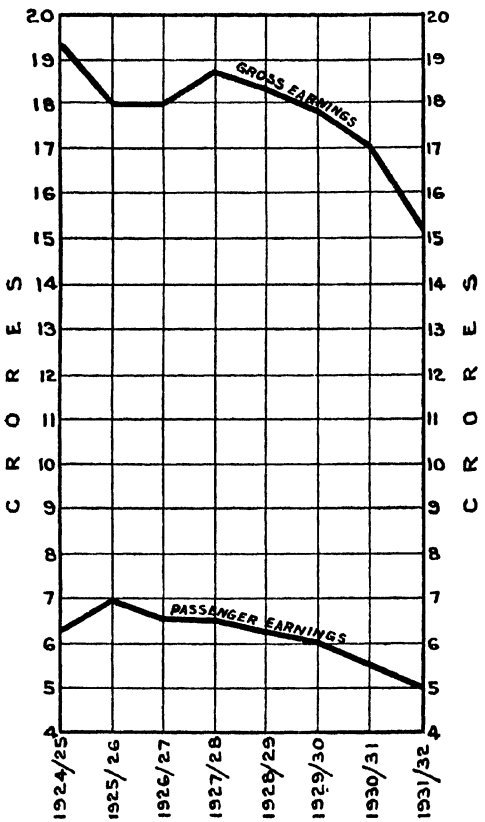
Experience has shown that ordinary water bound macadam cannot withstand the wear and tear of modern fast moving traffic. Therefore another most important need is to provide existing metalled roads with a more suitable type of surface. This has received and is receiving the earnest attention of the Punjab Government. Of the 2,540 miles of Provincial metalled roads about 90 miles have been laid as bituminous grouted macadam and about 600 miles have been painted with tar. This leaves a balance of about 1,800 miles still to be treated. However, as the cost of renewals is being considerably reduced by means of scarifying and reducing the quantity of new metal, it is expected that a very large tarring programme can be undertaken annually out of maintenance grants and that the entire Provincial mileage will be tarred within 3 years.

District Boards are also beginning to realise the advantages of tarring and it is possible that the 1,360 miles of metalled roads under these local bodies will also be tarred within a similar period.

Experience has also shown that considerable savings on maintenance are affected as the result of tarring ; therefore when the entire metalled mileage of the Province is tarred, an apparently larger mileage of metalled road can be maintained from the existing maintenance grants. This will be discussed later.

N. W. RY.

(EARNINGS IN CRORES)



CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH THE RAILWAY.

14. *Area served by North Western Railway.*—The area served by the North Western Railway is not confined to the Punjab. The railway serves large tracts of country in Sind, Baluchistan, the North-West Frontier Province, and the Punjab States. To the East of the Punjab, the North Western Railway penetrates the United Provinces, and it serves the province of Delhi. We emphasize this point because many of the facts and the figures we quote in this Chapter in connection with the North Western Railway relate not only to the Punjab, but to much territory outside it.

15. *North Western Railway working below capacity.*—In common with almost all the railways in the world, the North Western Railway is working much below its capacity. The passenger earnings and gross earnings from the official year 1924-25 to 1931-32 are given in the graph and table below :—

Year.	North Western Railway 1924-25 to 1931-32 (earnings in crores).	
	Passengers.	Gross.
1924-25	6·37	19·31
1925-26	6·91	17·93
1926-27	6·49	17·95
1927-28	6·49	18·72
1928-29	6·25	18·28
1929-30	6·08	17·78
1930-31	5·55	16·98
1931-32	4·89	15·16

From this it will be seen that the first year was a peak year as regards gross traffic. During this year there was an exceptionally heavy traffic in wheat and this was followed during the next three years by a large passenger traffic. From this point onwards, the passenger traffic declined; and since 1928-29 there has been steady decline in goods traffic.

16. *Roads in the Punjab parallel with the railway system.*—Like the other railways in India, the North Western Railway has been aligned to join centres of population and in many cases the towns served

by the railway were already connected by arterial roads. We have previously pointed out that of a total of 3,900 miles of metalled road in the province, 1,400 miles, or 36 per cent. run side by side with the railway up to a distance of about 5 miles from it. Since about the year 1927 many of these roads began to carry a heavy motor bus service, and the question of the adequate maintenance of the roads became acute. To provide a sufficient standard of maintenance, and to reduce the cost, tar, or bituminous surface, treatment has been resorted to, and has generally been successful. Motor buses naturally exploit the busy traffic channels between populous centres, rather than open up new routes, and hence the large number of these vehicles now running on roads parallel with railways. Moreover, the good maintenance of the provincial roads is another inducement to the bus-owners to ply over them.

17. *Effect of bus competition on passenger earnings of the North Western Railway.*—We have been asked to obtain from railways, any information they may have available of the effect of motor competition on their revenues. We have been informed by the North Western Railway officers that road competition was first noticed as affecting passenger traffic in 1927. Goods traffic only began to be carried in appreciable quantities by motor vehicles during last year and this, as we shall show later, has not yet assumed important proportions.

There are many difficulties in the way of estimating with any degree of accuracy the effect of motor competition on railway passenger traffic. First, there is the trade depression of the last few years. Reference to the figures of gross earnings given in paragraph 15 shows that since the official year 1927-28, there has been a steady all-round decrease in the revenues of the North Western Railway, and a large proportion of the decrease in passenger earnings between 1927-28 and 1931-32 must be attributed to this cause. Moreover, the heavy decrease in passenger earnings owing to trade depression has necessarily led to a reduction in passenger train mileage, and this in turn may have led to a further loss in passengers. Finally the question has been further complicated by the enhancement of passenger fares which was introduced from October 1st, 1931.

We give below four methods which have been used to reach an approximate estimate :—

(I) In a report on motor bus competition on the E. I. Railway written by Mr. E. V. Maclean in April 1929, it was suggested that a rough estimate of the decrease in passenger earnings due to motor competition might perhaps be arrived at by counting the number of competitive bus trips running daily and estimating the average earnings per trip at Rs. 10. According to a check made by the North Western Railway in March of the current year it was found that throughout the area served by the North Western Railway there were daily 2,403 competitive bus trips running. Excluding from this figure the buses running in areas outside the Punjab we find that there were some 1,200 competitive bus services running

daily in that province. If therefore we estimate the average earnings of each trip at Rs. 10, these buses would have earned Rs. 12,000 per day or Rs. 43,80,000 per year. It must be admitted that this method of estimating the earnings of a bus is very conjectural; moreover it cannot necessarily be assumed that if the buses were not running the whole of this money would have found its way into the revenues of the North Western Railway.

(II) The check of motor buses carrying passenger traffic has, however been carried somewhat further on the North Western Railway. The Divisional Superintendents have arranged to undertake quarterly a count of the numbers of passengers travelling in buses on each competitive route and the number of passengers found travelling when the last check was made amounted to 27,982. This figure, of course, includes many competitive bus services running outside the province and, if we exclude the figures relating to these, we find that on those bus routes within the province there were some 21,000 bus passengers counted at this check. At first sight there would appear a considerable disproportion between 2,403 competitive bus services carrying 27,992 passengers in the *whole* area served by the North Western Railway; and 1,200 buses carrying 21,000 passengers in the Province of the Punjab itself. But the apparent discrepancy is probably due to the intense bus traffic around some of the larger towns in the Punjab, especially Lahore and Amritsar; and to many of the motor vehicles plying outside the Punjab not having as high a passenger carrying capacity as the bus generally used in the Province.

The North Western Railway Administration estimates that the average bus trip per day amounts to about 30 miles and the corresponding third class railway rate for this distance is 9 annas at $3\frac{1}{2}$ pies per mile. If, therefore, all the passengers counted travelled throughout the whole route and would have travelled by railway had no buses been running the annual loss to the railway owing to bus competition amounts to :—

$$21{,}000 \times 9 \text{ as. } \times 365 = \text{Rs. } 43{,}15{,}000.$$

This figure must again be regarded as largely conjectural and we think that it is on the high side because it assumes :—

(*a*) that a bus trip averages 30 miles daily whereas we consider 25 miles would be nearer the mark,

(*b*) that the passengers counted on a bus travelled on the bus throughout the whole route,

(*c*) that had the buses not been running all the traffic carried by them would have been carried by railway, and

(*d*) that there was a steady passenger traffic on the bus route throughout the year.

(III) Another method of arriving at an estimate has been attempted by the North Western Railway. The earnings of certain passenger

routes on the railway at present unaffected by motor competition have been taken out for the year 1924-25 (a normal year, prior to trade depression or motor competition) and the year 1931-32, and these generally show a decrease in the latter year of about 17 per cent. which may reasonably be assumed as due to the trade depression. The table given in para. 15 above shows that the passenger earnings on the North Western Railway for 1924-25 amounted to 637 lakhs and in 1931-32 to 489 lakhs, a decrease in the latter year of 148 lakhs or 23 per cent. If of the latter decrease 17 per cent. may be attributed to trade depression there are some grounds for assuming that the balance 6 per cent. may be due to motor competition, and the figure arrived at is 39 lakhs. This figure, however, relates to the whole area served by the North Western Railway and in order to arrive at the corresponding estimated loss to the Railway in the Punjab the figure may be reduced by about $\frac{1}{4}$, *i.e.*, the same proportion as the competitive bus passengers carried throughout the area served by the North Western Railway bear to those carried in the Punjab as given in method (II) above. The resulting figure is between 29 and 30 lakhs.

(IV) We give one other method of arriving at some estimate, not based on any information provided by the Railway. There are in the Punjab some 3,034 motor buses registered, and judging by the information we have collected on the number of buses in the Punjab registered in excess of present requirements, we think it unlikely that more than $\frac{2}{3}$rds of these get a trip each day ; and we consider that, on the average, a trip amounts to 25 miles. The bus fare on routes competitive with the Railway (except where acute competition has arisen) is usually the same as the third class railway fare, $3\frac{1}{2}$ pies per mile ; on other routes it is generally somewhat higher. If, however, we assume an all-round bus fare of $3\frac{1}{2}$ pies per mile, and a load of 20 passengers per trip, we get the following approximate estimate of annual earnings of all motor buses plying in the Province :—

$$\frac{2{,}000 \text{ buses} \times 25 \text{ miles} \times 3\frac{1}{2} \text{ pies} \times 20 \text{ passengers} \times 365 \text{ days}}{12 \times 16} = \text{(approximately) Rs. 66,00,000.}$$

The large majority of buses ply over the 3,900 miles of metalled road in the province, 36 per cent. of which consists of roads running parallel with railways. Again the greater number of bus services are on routes competitive with the railway, and we do not think it would be an overestimate to assume that of the estimated annual earnings calculated above, about half, or Rs. 33 lakhs, arise from buses running in competition with the Railway.

18. *Consideration of rough estimates given in previous paragraph.*— The estimates given in methods (I) and (II) above of Rs. 43,80,000 and Rs. 43,15,000 are for the North Western Railway in the Punjab, and are, we think, both on the high side. Method (III) gives a figure of Rs. 39 lakhs for the *whole system* and about 30 lakhs for the railway *within*

the province. Method (IV) which is not based on Railway data gives Rs. 33 lakhs for the North Western System *within the province.* All the figures have been calculated by rough and ready methods and must be treated with reserve, but results (III) and (IV) have been arrived at by entirely different routes, and are within measurable distance of each other.

In the absence of any better estimate we do not think that it would be unreasonable to assume that in passenger earnings the annual loss to the North Western Railway in the whole territory it serves, owing to motor bus competition, is somewhere in the neighbourhood of 39 lakhs. In this connection, however, we would point out the need of devising some means of more accurately estimating the effect of motor competition on railway earnings. We suggest that better results might probably be obtained if those entrusted by the Railway with the work of checking bus trips and checking passengers on buses were to keep in close touch with the Deputy Commissioners and Road Authorities in the Province. The Road Authorities in the Province are directly interested in the amount of motor traffic passing over the various roads in order to gauge the needs of road maintenance. For this purpose they periodically organise a census of road traffic and it seems to us that if the railway employees entrusted with the work of checking motor passenger buses on various routes were to carry out their duties in close conjunction with the Road Staff possibly more reliable figures of the passenger traffic being carried by competitive motor buses might be procurable.

19. *Relation of short distance passenger traffic on the North Western Railway to bus competition.*—Judging by the particulars given to us it is principally short distance third class passenger traffic on the North Western Railway that has so far been affected by motor competition, and it is possible that a more accurate figure of the losses arising from bus competition might have been available if the earnings from short distance third class passengers had been ascertainable for the zone 1-50 miles for the period of years back to the official year 1924-25 which may, we understand, be regarded as the last normal year in passenger earnings prior to the trade depression and motor competition. Unfortunately passenger earnings by zones on the railway have only been compiled from the official year 1928-29.

In view, however, of the fact that so far competitive bus services are principally confined to short distances, it is, we think, of interest to see what proportion short distance third class passenger traffic bears to the total passenger revenue on the North Western Railway. In the half-year ending March 31st, 1932 the number of third class passengers carried over the North Western Railway amounted to 26 lakhs and of these 20 lakhs, or 70 per cent. travelled 50 miles or less. The revenue earned from these passengers bears a far lower proportion to the total third class earnings and amounted to 66 lakhs out of 2 crores of rupees or only 33 per cent. Thus the short distance third class passenger

traffic on the North Western Railway contributes about a third of the total third class revenue.

20. *Long distance passenger traffic by motor buses.*—Although generally the average competitive daily motor bus trip on the North Western Railway amounts to about 25 miles, the North Western Railway have furnished us with cases showing that the radius of activity of motor buses extends on certain routes very much further, and if this development continues its effect on railway passenger revenues cannot fail to be serious. Passenger buses are plying over the following routes in excess of 50 miles. It will be noted that some of the routes given are outside the Punjab :—

	miles.
Delhi-Panipat	55
Kalka-Simla	60
Kohat-Thal	62
Lahore-Lyallpur	86
Jhelum-Chakwal	92

We were also informed that in 1928 during the *Kumbh Mela* at Hardwar buses ran between Lahore and Hardwar. This, of course, was a special occasion, but we think it worth mentioning as indicating the possibility of long distance passenger traffic by motor buses developing still further.

21. *Goods Traffic by Motor Buses.*—The North Western Railway Administration reports that it was only during the last year that goods traffic began to be carried by motor transport in appreciable quantities. In the notes handed to us a detailed statement of all such traffic detected on the Divisions has been recorded and this shows that motor transport is being used principally to convey the following commodities :—piecegoods, groceries, ghee, fresh fruit and vegetables, grain and common seeds, iron goods, hides and skins. It will be noted that some of these commodities such as piecegoods, groceries, hides and skins, fresh fruits and vegetables and ghee represent traffic which has hitherto been regarded as valuable traffic from the railway point of view, being classified above the first class. Groceries and piecegoods, in particular, are classified 6th class owners' risk and 8th class railway risk.

As already indicated the goods traffic so far detected as travelling by motor vehicles has not assumed large proportions but judging by the number of consignments of piecegoods and groceries already carried in motor buses it would seem that the tendency in the Punjab is in the same direction as in other countries, *i.e.*, motor transport is diverting from the railways the more valuable high grade traffic. If this process is to go on unchecked there is the danger of low grade traffic being left to the railway, which may be compelled to raise the rates for low grade traffic to meet its obligations, a process which has taken place in other countries.

22. *Goods consignments by motor transport over long distances.*—Another feature which is noticeable in the particulars furnished to us

in connection with this traffic is that it is by no means confined to short distances, as will appear from the following table :—

(*a*) *Piecegoods.*

	Miles.
Ludhiana to Amritsar	84
Amritsar to Gujarkhan	179
Amritsar to Jhelum	136
Amritsar to Rawalpindi	212
Amritsar to Bhalwal	184
Amritsar to Sargodha	186
Peshawar to Landikotal	135
Amritsar to Okara	114
Amritsar to Hafizabad	125
Amritsar to Chak Jhumra	110
Amritsar to Chiniot	127
Amritsar to Lyallpur	123
Amritsar to Gojra	152
Amritsar to Toba Tek Singh	170
Amritsar to Jharanwala	128
Amritsar to Montgomery	137

(*b*) *Fresh fruits and vegetables.*

Rawalpindi to Delhi	477
Rawalpindi to Peshawar	106
Landikotal to Peshawar	125
Amritsar to Lyallpur	123

(*c*) *Hides and Skins.*

Chiniot to Lahore	95
Hafizabad to Lahore	93
Gojra to Lahore	121
Toba Tek Singh to Amritsar	170
Jaranwala to Amritsar	100
Chak Jhumra to Amritsar	110
Gojra to Amritsar	153

(*d*) *Groceries.*

Amritsar to Sangla Hill	94
Amritsar to Hafizabad	125
Amritsar to Chak Jhumra	110
Amritsar to Lyallpur	123
Amritsar to Gojra	153
Amritsar to Toba Tek Singh	170
Amritsar to Jaranwala	100

23. *Agencies for booking merchandise by motor transport at Amritsar.*— The previous paragraph indicates that the principal centre from which goods are being conveyed by motor transport is Amritsar, and we were informed by the North Western Railway that there are established in

Amritsar City certain organizations engaged in this work. The proprietors of these organizations do not generally own the motor lorries; they merely act as collecting agents for the various motor lorry owners carrying the traffic, and charge a commission on such business as is done. Three of the firms, the Gujranwala Transport Company, Messrs. Jhara Singh Ganga Singh and the Northern India Transport Company actually own a few lorries, but these are used chiefly for collecting goods which are brought to certain parking places in Amritsar City utilized as collecting places for the traffic. The goods are collected during the evening; they are booked and a regular receipt is issued. If the consignor can guarantee a full lorry load, the lorry may collect the consignment from the consignor's godown. The goods leave Amritsar during the night and according to the information we have received the lorries carrying consignments are almost invariably over-loaded, a point we deal with later on in this chapter.

24. *Estimated loss of revenue by the North Western Railway on goods traffic carried by motor transport.*—The North Western Railway Administration furnished us with detailed particulars of the check which had been made on the important traffic which is being carried by motor lorries in large quantities, and the total loss on this traffic for the period of a year is estimated at about 4½ lakhs of rupees; not, perhaps, in itself a large figure, but one which sufficiently indicates that further developments in this business, if it continues to grow, may in time seriously affect the goods earnings of the railway.

25. *Convenience of passenger bus services especially for short distances.*—It cannot be denied that the short distance passenger buses at present running in competition with the North Western Railway provide services for the public which the railway cannot equal in convenience on frequency. In some cases the buses, even when not providing a "door-to-door" service, run from the centre of one town to the centre of another; whereas the railway alignment is too often some little distance from the villages and the towns served by the road. Such conditions are particularly noticeable in the road and rail alignment, say, between Delhi, Meerut and Muzaffarnagar. Again, motor buses can provide a frequent service at close intervals of time for a limited number of people; and though the railway has a capacity for transporting far greater numbers it can only provide trains at comparatively long intervals. We understand that between Rawalpindi and Gujarkhan (30 miles) there are enough passenger buses plying to provide a regular half hour service throughout the day and between Lahore and Amritsar there are so many buses running that if they were started at regular intervals they could provide a five minute service. It is obviously impossible for the railway to compete with this. To do so between Rawalpindi and Gujarkhan the line would certainly have to be doubled, and to afford a sufficiently frequent service between Lahore and Amritsar the line between these points would have to be quadrupled.

26. *Methods of meeting bus competition.*—Owing to these advantages it is generally contended that short distance passenger traffic has been

diverted from the railway to the road never to return. But to this generalization there are certain qualifications. Something may be done to make the railway more popular if the timings of local trains are made suitable. The ramifications of the N. W. Railway make the framing of a suitable time table for *local* traffic a matter of great difficulty because in many places trains have to be run on branch lines to make connection with main line trains and hence it follows that many local trains have to be run at timings which are inconvenient for local passengers. The N. W. Railway are now experimenting with Sentinel Coaches on certain of their branch lines and these coaches are being run at times suitable for local passenger traffic ; and on certain branch lines the running of these coaches has been a success and has to some extent brought back short distance passenger traffic to the railway.

Another method of meeting with the competition has been to lower the rates on the railway and to introduce daily return tickets at a single fare and a fraction. This method has been partially successful between Lahore and Amritsar.

Another point which must be borne in mind in connection with the diversion of short distance passenger traffic from the railway to competitive bus routes is that the drivers of motor buses are probably not recovering from passengers a really economic fare ; and if steps are taken to institute better control and regulation of buses this will have the effect of increasing bus fares and placing the railway in a better position to meet with competition, which, for many reasons, as pointed out later, the N. W. Railway claims to be unfair.

27. *Convenience of carriage of goods traffic by motor transport.*—As in the case of passenger traffic there can be no doubt that the conveyance of certain goods by lorry is a convenience to the public. From information we received from the motor transport agencies at Amritsar we find that every endeavour is made by these organizations to give a " door-to-door " service and the consignor thereby saves transport to the station and the consignee is saved the trouble of taking delivery from the railway station at destination. Thus the service given provides rapidity, and, moreover, safety, as extra handling is avoided. To compete with these advantages it might be possible for the railway to undertake more generally the services of collection and delivery and to devise some special means of quick transit during the night to ensure delivery of consignments at destination next day. But, as in the case of passenger bus services, the Railway claims that the competition for the carriage of goods traffic by lorries is unfair. The lorry drivers are not generally collecting an economic rate and from information we have received from many sources, it would appear that lorries conveying such goods are systematically overloaded and the fact that the transit of traffic is undertaken during the night makes the evasion of the motor regulations in regard to overloading easy.

28. *Unsatisfactory conditions of present bus and lorry services.*—The majority of buses and lorries running in the Punjab are vehicles with

a seating capacity carrying from 19 to 23 passengers, or a load of 30 cwts. or 40 maunds. The standard of comfort provided for passengers is, we consider, generally adequate, always given that there is no overcrowding. But all the evidence we collected on this point shows that overcrowding is the rule rather than the exception. In the course of our tour we stopped a number of buses on the road and most of them were found to be carrying passengers in excess of the marked carrying capacity of the vehicle. With the exception of the Rawalpindi district, the information we obtained from districts on this point was to the effect that the police check on overloading was inadequate owing to lack of staff, and even if periodical checks were imposed it was quite easy for bus drivers to evade them. This matter of overloading, both of passenger and goods vehicles, has a very direct relation to the fares and rates charged for motor transport, and this we deal with more fully in the next paragraph.

Another point which may give rise to inconvenience to the passengers is that the buses do not run to any time-table and a passenger getting into a bus may have to wait some considerable time until the bus load is complete, until when the bus driver will not start. The bus driver, moreover, is not, we understand, compelled to exhibit on his vehicle any table of fares and in this he is in a position of advantage compared, say, with the rickshaw men at Simla.

We have been unable to collect any statistics of accidents to buses in the Punjab, but it was generally stated that they were too common. The bus services at present are almost all being run by owner drivers with probably little other property than the bus they drive. These men are under no obligation to provide for third party risk and it is clear that no redress can be obtained from them for injury or death due to negligent driving.

As regards goods traffic, we were told that the commission agents organizing this business did accept responsibility for losses or damage.

29. *Fares and Rates charged by motor buses and lorries.*—We have been informed that generally the fares charged for passengers on motor buses approximate to the railway fare, 3½ pies per mile, on those routes competitive with railways; and on other un-competitive routes the bus fares are usually on a higher mileage rate. In most of the districts where we have collected information we have found that there are far more buses on the road than the traffic warrants. The Divisional Superintendent of the N. W. Railway, Delhi Division, informed us that the competitive buses affecting his Division are only getting a trip once in four days. The Deputy Commissioner of the Ludhiana District informed us that in his district buses only get a trip about once in three days. While in other districts the excess number of buses may not be so noticeable, there can be no doubt that there are at present more buses registered than are justified by the passengers and goods to be carried. The effect of this has been that, quite apart from the competition with the railway, bus proprietors have been engaged in competition with each other, and are generally charging fares and rates which apparently cannot give them adequate return unless they resort to very considerable overloading,

Moreover, as a result of the prevalent unemployment among owner drivers, the latter appear to be prepared, in certain cases, to accept rates covering only the cost of petrol, and their daily subsistence.

So far as passengers are concerned, we may give as an example bus fares between Lahore and Amritsar. The railway route is 33 miles and the ordinary railway fare is as. 10. The road is 35 miles but the present bus fare is as. 7 or as. 6 and we were informed that from one parking place in Lahore it was possible to get a seat in a bus proceeding to Amritsar for as. 5. We have been at some pains to try and arrive at the figure of running costs per mile of a 30-cwt. lorry and consider that this cannot be reduced below as. 5 a mile, and it is very doubtful whether this figure includes all the expenses involved. If, however, we take as. 5 a mile as being the cost, a bus running one trip between Lahore and Amritsar would have to earn at least 175 annas to meet its working expenses. To enable this sum to be recovered in fares at as. 7 a passenger the bus would have to take a load of at least 25 passengers; so that if the bus driver is to make any profit in addition to his working expenses he must load up his bus with a considerable number of passengers in excess of its capacity.

From the statement handed to us by the N. W. Railway the rates charged by the transport agencies for goods by lorry appear to vary considerably—probably due to the traffic offering and the possibility of a return load. We were informed, however, by the merchants of Lyallpur that it is possible for silk to be conveyed from Amritsar to Lyallpur—a distance of 123 miles—at as. 6 per maund. It is perfectly obvious that this rate cannot pay the lorry driver, for the cost of running a lorry from Amritsar to Lyallpur—123 miles—at as. 5 a mile amounts to 615 annas, and therefore to recover his expenses on the trip alone the bus driver would have to carry 10 maunds. The merchants at Lyallpur admitted that the rate was not a remunerative one. The case quoted is probably extreme because according to the statement handed us by the N. W. Railway the transport agencies at Amritsar have conveyed cotton piece goods and groceries from Amritsar to Lyallpur at the rate of as. 10-6 pies.* But to recover his working expenses even on this rate the lorry driver would have to take on his lorry at least 60 maunds of traffic.

The N. W. Railway has recently made certain checks at Amritsar and at the Ravi Bridge Octroi post on lorries conveying goods and these checks disclosed many cases of motor lorries with a capacity of 30 cwts. or 40 maunds carrying from 55 to 86 maunds. The Railway have reported these cases to the Police.

30. *Terminal Taxes.*—The N. W. Railway Administration complained that the collection of terminal tax by the Railway on behalf of Muni-

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* The rate for groceries over the same route by railway is as. 9-7 pies per maund and the rate for country piece goods is Rs. 1-3 per maund.

cipalities where a similar tax is not imposed on road-borne traffic affects the Railway in two ways, namely :—

(1) It diverts traffic from the Railway to the road ;

(2) It diverts traffic from the large Railway stations where the tax is imposed to the smaller stations at which the tax is not levied.

The trader looks upon the terminal tax as an addition to railway freight which may be evaded by not using the Railway, and where he has no option but to use the Railway, he books his consignments to the adjoining station to that at which the terminal tax is levied and he carts his stuff thence to his shop.

In order to safeguard the Railway's interests from the loss of revenue arising through rendering such services to the Municipalities, it has been decided to discontinue collecting the tax unless local bodies concerned impose a similar tax on road-borne traffic. This, however, has only proved a palliative measure as certain Municipalities have refused to impose such a tax and, in order not to lose their revenue from this source, they have on the Railway discontinuing to collect the tax on their behalf, set up a barrier immediately outside Railway gates and continued to recover the tax.

Where, again, the tax is also imposed on road-borne traffic, the N. W. Railway state that the position is little better for the following reasons :—

(*a*) There is in certain cases a lower rate imposed on goods imported by road.

(*b*) Contracts are let by the Municipalities for the collection of terminal tax on road-borne traffic for a lump sum amount annually. In such cases it is to the interest of the contractor to make as much as possible beyond his contracted amount, and he can only do so by encouraging all the traffic he can to the road with the lure of collecting a lower Terminal Tax charge than has been sanctioned in the schedule.

The N. W. Railway have complained to Government of the effect of terminal tax, raising the question on the specific example of the town of Khanna, where no terminal tax is imposed on road traffic. The following is an extract from the Government's reply :—

" The erection of road barriers would entail an additional annual expenditure of Rs. 1,500 and this expenditure is not justified by the estimated amount of income from collection of the tax on road-borne traffic. Moreover, there is reason to believe that the levy of the tax on rail-borne articles only will not have any prejudicial effect on rail-borne traffic, as the rates of tax have been fixed at a low figure and it is not expected that persons will unload goods at railway stations other than Khanna, so as to avoid the payment of terminal tax by importing goods into the small town by road. If, however, experience shows that

there has been diversion of traffic from the railway, this Government will be prepared to consider the question of revising the tax schedule so that the North Western Railway authorities may not be placed at a disadvantage.

It is further observed that the imposition of the tax in question has been duly notified, and that it is now not possible to suspend the collection of the tax without the concurrence of the Town Committee of Khanna. It is believed that the small town of Khanna is not the only place in which terminal tax is being levied by the Local body concerned on rail-borne articles only."

The Divisional Superintendent, Delhi, gave us an interesting example of how terminal tax is evaded on his Division. It has become the practice to book certain goods from Calcutta to Ghaziabad, and to take delivery at the latter place owing to the terminal tax levied on the invoiced particulars of taxable goods received at Delhi Main Station. If this is done, it is clear that there must be definite advantages in importing goods by road.

31. *Unfairness of bus and lorry competition.*—The N. W. Railway administration generally complained that the competition from which it is now suffering owing to motor transport is unfair and as a concluding paragraph of this chapter we set forth the arguments quoted by the Railway in support of this :—

(*a*) The railway administration points out that whereas the railway and its rolling stock is subjected to a close inspection to ensure the safety of the travelling public, the inspection of motor vehicles is not of the same standard. As already stated above, the inadequacy of inspection was generally admitted in all the districts we visited except Rawalpindi.

(*b*) The railway administration also calls attention to the systematic overloading of motor vehicles which proves the inadequacy of inspection of buses and lorries *en route*. We must admit that the contention of the railway as regards this is correct, and it is probably owing to this that many proprietors of buses and lorries are being able to carry on their business.

(*c*) The railway administration points out that whereas a railway is compelled to issue time tables, fare tables, to keep accounts and to give tickets and receipts,* for passengers and goods respectively, no such obligations are imposed on the proprietors of motor transport.

(*d*) The railway administration points out that it is compelled by statutory obligation to limit the hours of work of its operating staff. No such restriction is imposed on motor transport.†

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* The motor transport agencies for carrying goods in Amritsar issue receipts.
† Motor transport in the Punjab is very largely in the hands of owner drivers.

(*e*) The railway administration suggests that it is probable that licenses are being granted for the driving of motor vehicles too easily and that the would-be drivers are not properly tested as to medical fitness or their capacity to drive. It is well known that the medical tests imposed on the operating staff of railways and the examinations undergone by them as to their fitness for their work must necessarily be strict.

(*f*) The railway administration points out that whereas in the case of accidents on the railway careful enquiries have to be made and drastic action is taken if a railway employee has caused an accident by negligence, public opinion does not appear to attach the same importance to road accidents. Careful statistics are kept of all accidents on the railway. Statistics regarding road accidents are not apparently compiled or published.

CHAPTER IV.—MOTOR TRANSPORT IN THE PUNJAB, ITS TAXATION AND REGULATION, AND THE POSSIBLE DESIRABILITY OF TIGHTER CONTROL.

32. *Number of motor vehicles registered.*—According to figures furnished to us in Lahore the numbers of motor vehicles at present registered and being taxed in the Punjab are as follows :—

Motor cars	2,204
Taxis	355
Motor buses	3,034
Commercial lorries	135
Motor cycles	1,145
	6,873

There is no annual re-registration as such, but since on every vehicle a tax has to be paid quarterly, in effect the taxation registers provide for annual re-registration and furnish the material for an accurate record of the total number of motor vehicles in use. We venture to think, however, that there is possibly some error in the compilation of the above figures in respect of motor cars, and while the same suspicion does not attach to the figures regarding motor buses, it would perhaps be desirable to have a special census taken of the number of vehicles actually paying tax and registered so as to check the totals.

33. *Taxation.*—Provincial taxation of motor vehicles was imposed under the Punjab Motor Vehicles Taxation Act, 1924, as amended by the Punjab Motor Vehicles Taxation (Amendment) Act, 1925, and is governed by the provisions of the Punjab Motor Vehicles Taxation Rules, 1925. A schedule of the taxes in force will be found at Appendix 3, from which it will be seen that the tax upon an ordinary 30 cwt. vehicle licensed as a bus to carry 20 passengers, and normally plying outside municipal limits, will be Rs. 50 ; and it is a peculiarity of the schedule that the same rate applies apparently to a 7 seater taxi as to a 20 seater motor bus The tax on a rural motor bus is therefore exceedingly light having regard to that in force or contemplated in other provinces, and as municipal wheel taxes and other taxes have been abolished since the imposition of the provincial tax, the lot of the owner of a rural motor bus in the Punjab is in this respect a happy one.

34. *Parking Fees.*—There is, however, one way in which an additional tax is now apparently being levied on rural motor buses principally by urban local bodies. It is clearly necessary that buses plying for hire from municipal centres should be required to stand at certain fixed places within municipal limits so as not to obstruct roads, streets and bazars ; and arrangements have been made to provide bus stands in most towns. We understand, however, that the arrangement frequently

is that the local municipality or small town committee is charged with the duty of providing such a stand and is supposed to be allowed to recoup itself for the expense involved by levying a small charge on the bus owner. It appears, however, that this arrangement has developed into a species of tax by the town committee on buses plying outside municipal limits. The procedure appears to be for the municipal authority, having obtained or set aside a piece of land, to auction to some individual the rights of collecting fees from bus owners for the use of this "stand". The result sometimes is that a large income accrues to the local body which in return does not appear to provide any corresponding service. At Jagraon, it is true, we found that good sheds had been erected at the stand by the small town committee, motor buses being parked in these at a charge of 3 annas for each time the bus left the shed on a business trip ; and this charge might perhaps be regarded as reasonable. At Gujar Khan on the other hand we found that the local body provided no shed or other facilities whatever but having obtained a piece of Government land at a nominal rental of Rs. 150 per annum leased this out to a contractor for a sum of Rs. 3,000 per annum. The contractor in turn was said to be levying a charge amounting to one anna in the rupee, or $6\frac{1}{4}$ per cent. of the takings of the bus owner per trip, for each trip performed from that stand. The facts may not be exactly as we have gathered, but it is evident that a considerable income is being made by certain local bodies by this means which appears to us to be indistinguishable from a tax on motor buses. The principle of taxation of motor transport by one authority only is thus being defeated, and the system appears to be open to certain other abuses.

35. *Regulations.*—The Punjab Motor Vehicles Rules, 1931, made by the local Government under the provisions of section 11 of the Indian Motor Vehicles Act, 1914, are possibly the most recent provincial rules in India. During our tour we gathered that there was a certain amount of difficulty in the application of these rules and certain loop-holes in them. But we understand from a discussion which we were able to have with Mr. J. M. Ewart, C.I.E., Inspector General of Police, Punjab, that many of the difficulties being experienced are due to the rules being comparatively new and to the fact that the Police and Magistrates concerned have not yet fully grasped the various provisions, which are generally adequate and exhaustive. On the general question of the tightening up control, particularly over public service vehicles, we gathered that difficulties are in some measure due to the absence of adequate staff owing to present financial stringency. Mr. Ewart, however, informed us that on the whole he considered that within a year or two it would be possible without very great additional expense to bring motor vehicles in general and public service vehicles in particular into better control. One difficulty which has arisen particularly in the case of motor buses or lorries carrying goods over considerable distances is the prevention of overloading. It is difficult enough to prevent overloading of passengers even when any Police constable can easily count the number, but when it comes to overloading of goods there are at present no facilities for

checking this, short of causing the lorry owner to unload the whole vehicle near some weighing machine so as to weigh the contents. In this connection we would recommend consideration of the use, *e.g.*, of "load-o-meters" which were exhibited by Messrs. Avery and Company at the time of the Road Conference in Simla in 1931. These machines are comparatively cheap and are portable and with a pair of them the gross load of a motor vehicle can be determined in a few minutes.

36. *Public Motor Vehicles not restricted to locality.*—But perhaps the principal feature of the Punjab Motor Vehicle Rules affecting our enquiry is that, under the provisions of Part II-A. "Issue of Permits and Tokens", a vehicle registered as a public service vehicle cannot be restricted to any locality or any particular road but merely to roads of a certain class. For this purpose under Appendix V to the Rules the roads of the province have been divided into 3 classes A, B, and C. Class A being chiefly roads metalled with stone, Class B roads metalled with kankar or brick, and Class C unmetalled roads, and there are restrictions as to the weight of vehicles which may be registered for use on each class. But as the limit for Classes B and C is a 30 cwt. vehicle and the limit for Class A something higher, and as practically all motor buses are in the 30 cwt. class, it follows that practically every motor bus registered is made free of the roads of the Province generally. Thus as far as the regulations are concerned cut-throat competition with its attendant evils may develop on any road at any time, and there is little inducement for any individual (or company) to endeavour to open up and develop new routes or build up a business thereon because as soon as he has done so, possibly at some little initial outlay, a swarm of private buses may descend upon him and deprive him of the fruits of his enterprise.

37. *Desirability of tighter control.*—The control of rural motor transport is manifestly a difficult matter, requiring considerable experience and close study and we naturally feel some diffidence in putting forward as a result of our brief enquiry suggestions which may appear at first sight to be criticisms of existing arrangements. But from the material available before we commenced our enquiry it was evident that railway authorities felt strongly that competitive motor buses were in the privileged position of somewhat lax control and we set ourselves to ascertain, if possible, how far a tightening up of this appeared to be desirable in the interests of the bus travelling public, and how far a tighter control purely in the public interest would meet the objections and difficulties of the railways. In our list of questions for discussion with district officers which we issued in advance we therefore asked whether any further restrictions should be imposed on buses in the direction of requiring a higher standard of public service. We added another question upon the public benefits resulting from motor transport and the desirability or necessity, from the wide standpoint of public policy, of its competition with railways. In what follows we endeavour to set down fairly our impressions of responsible and informed opinions on these points, and suggestions regarding further control which appear to arise

therefrom. But we would emphasise that we hope during the course of our tour to have a great deal of light thrown on these questions and that our suggestions are at present merely provisional.

38. *Closer control necessary in the interests of the bus travelling public.*— With the exception of the Rawalpindi district, where control appears to be more complete, our general impression is that, apart from any effect upon railway competition which it might have, a general tightening up of control would be welcomed. The principal defect is overcrowding, and this appears to be a somewhat paradoxical effect of the general excess of buses over present passenger requirements. Competition with railways and between bus owners has on many routes reduced rates of fare to a level which appears to provide merely petrol and bare subsistence, but can at best leave no margin of profit at all unless on every trip a bus runs overloaded. Consequently the owners have generally arranged a roster among themselves whereby each bus gets a trip in turn. In Ludhiana we were told that a bus was only getting one trip on the road in every three days; in other districts the position appeared to be that a bus might get a trip every other day; and generally there is manifestly a large excess of buses over the requirements of the passenger traffic now offering. The result of the operation of this roster system is that when a bus owner's turn comes round he will not leave the stand until he has his full complement and, possibly, if control is lax, one or two additional passengers, and on the road he proceeds to pick up every additional passenger that offers until the bus is overcrowded to an extent which is dangerous and certainly the cause of very great discomfort to the passengers. On several occasions when we questioned passengers in a bus they complained bitterly of the discomfort arising from overloading but said that they were unable to prevent the driver either from starting with an excess load or from picking up additional passengers on the road when already overcrowded. We also heard a certain amount of evidence to the effect that bus services were being discredited owing to the number of accidents taking place but that the various advantages in frequency of service and so forth still induced people to travel by them even at the risk of an accident. While it must be admitted that accidents are frequently caused by the vagaries of the bullock cart and by stray animals wandering across the road at a ciritical moment we think that their prevalence is probably aggravated by (*a*) overcrowding which frequently hampers the driver in the control of his vehicle, (*b*) the lack of skill and judgment displayed by drivers, (*c*) excessive speed and (*d*) defects in the vehicle and its brakes due to imperfect quarterly examination.

To the extent to which we have been able in the short time at our disposal to examine these questions and to sound public and official opinion thereon, we have arrived at the conclusion that adequate control in existing circumstances will require considerable additional expenditure upon police and inspectorate staff. But we have been impressed with the probable difficulties of bringing about effective control so long as the business remains in the hands of an excessive number of impro

vident owner drivers who have little to lose by conviction and fines and are forced by circumstances and cut-throat competition into breaches of the rules in respect of overloading and deprived by cut-throat fares of the return necessary to enable them to keep their vehicles in a proper state of repair. Incidentally these conditions also bring about rapid deterioration of public service vehicles when heavily overloaded with goods of various classes and must result in a deterioration of the vehicle in respect of the comfort of the passengers as it may have happened that the classes of goods carried are such as to render the bus unfit for the future carriage of passengers. In one case, for instance, we saw a bus standing at the roadside loaded well above the level of the seats with raw sheep skins.

39. *Monopolies or limited Licenses.*—In these circumstances we endeavoured to elicit opinion as to the desirability of introducing some system of monopolies or limited licenses to ply on certain routes so as to avoid cut-throat competition and to enable owners to secure a reasonable return on their outlay and at the same time to provide them with a remunerative business, the loss of which on conviction for an offence under the rules would be a serious consideration. It is clear that before any such system could be introduced the existing rules would require amendment to enable the local authority to restrict the number of vehicles plying for hire on any particular route and we venture to think that this is in any event desirable. As regards monopolies opinion appears to be divided and we understand that the local Government is not at present in favour of them. Nevertheless we were informed that in certain districts arrangements are actually in force whereunder the proprietor of a motor vehicle or vehicles is in some way allowed the sole right of plying for hire over a certain road in return for an undertaking by him to maintain the road over which he plies in a motorable condition. This arrangement is, of course, only in force upon lightly trafficked unmetalled roads but appears to work satisfactorily and to be unobjectionable from the point of view of the public provided that maximum fares are fixed. In view of the apparent dislike for monopolies to which there are manifest objections, we hesitate wholeheartedly to suggest the adoption of such a system, but we cannot escape the feeling that many of the present disadvantages in motor transport are attributable to the fact that the business is largely in the hands of men of straw, and that more reputable individuals or firms are unlikely to enter into a business in which there can be no security, so long as there is the possibility of cut-throat and uneconomic competition.

We therefore think that serious consideration should be given to the question of so amending the rules and the established procedure as to encourage the entry into the business of more reputable and reliable operators of motor transport, and we suggest for consideration, first, that the rules should be amended so as to enable the number of vehicles plying for hire on any route to be restricted and that thereafter the licenses or permits to ply on such routes should be divided among a number of individuals or firms in such a way as to avoid,

on the one hand, cut-throat competition and, on the other, a monopoly sufficiently powerful to disregard the pockets and the interests of the public.

40. *Compulsory Insurance against third party risk.*—Arising out of this recommendation is the question of compulsory insurance by owners against third party claims from passengers or members of the public using the roads and while we have received a certain amount of opinion in favour of compulsory insurance, there are many obvious difficulties in the way of it and we would only say that the matter requires very thorough investigation. In this connection one suggestion which was made to us was to the effect that in place of compulsory insurance the owner of a public service motor vehicle should be required to deposit with the appropriate authority a substantial sum, say, Rs. 3,000 as security from which, in the case of a successful suit for damages, the Court might order compensation to be paid. We would only remark that the present type of owner driver could afford neither the premium for compulsory insurance nor to make the deposit in question and that this consideration again points to the desirability of bringing into the business persons of greater substance.

41. *Advantages of partial Monopolies.*—A transport company or an individual owning a number of vehicles and enjoying a partial monopoly and security from cut-throat competition in his business has much to lose in the event of an employee violating regulations ; such a firm or company has everything to gain by providing an adequate and efficient service for the public ; and it would appear to us to be possible by encouraging some system of limited monopoly such as we have suggested to provide for healthy competition and to eliminate the unhealthy. Such reputable companies or individuals could be required if necessary to ply according to a published time-table ; they could be required to issue tickets for seats to their passengers and to have a regular tariff ; and presumably their employees would be subject to appropriate labour legislation. Were such companies or individuals to enter into the business, one important result would be that Railway Administrations could enter into agreements with them for the exchange of traffic which would in itself assist in the co-ordination of road and rail transport. At present it is not generally possible for Railway Administrations to enter into any such arrangements with the type of individual in whose hands the business at present largely lies.

Our general conclusion is therefore that steps should be taken by amendment of the rules and otherwise to eliminate uneconomic competition and to bring the business into the hands of more reputable people. This in itself while resulting in substantial improvements in the service offered to the travelling public would have the effect, we believe, of bringing the fares charged by motor buses up to a proper commercial and economic level and this incidentally would tend to prevent uneconomic competition with railways and in fact remove the principal objection at present urged by the railways in respect of short distance traffic that the competition is in many respects unfair.

42. *Restriction of long distance motor traffic.*—In the preceding paragraphs we have dealt with the developments necessary in our judgment to bring short distance traffic in competition with railways on to a fair and economic basis and we feel that with the manifest advantages which motor transport possesses over railways in the frequency of service and convenience of terminal stops, this class of competition has come to stay and must be faced by the railways on a fair and equal basis. But the entrance of motor transport into competition with the railways over long distances for the carriage of both passengers and goods is a development which we consider to be unnecessary from the point of view of the travelling and the trading public and undesirable in that if allowed to develop unchecked it may substantially affect the earnings of the railways upon the prosperity of which the prosperity of the public ultimately depends in a very large measure. At present we believe that the average passenger bus trip in the Punjab amounts to about 25 miles though some extend very much further. We also believe that unemployed or spare buses and a few lorries carrying merchandise at what we think to be uneconomic rates over very considerable distances are comparatively few in number, and are even likely to decrease when financial conditions improve and the number of buses in excess of legitimate passenger requirements becomes less. Nevertheless, even if the carriage of goods and passengers over long distances is merely a temporary manifestation of the special conditions prevalent at the present time we have no hesitation in recommending that steps should be taken to prevent it. It has been stated in the letter from the Government of India to local Governments in which our enquiry was proposed that it is to the interests of no one that the efficiency of railways should permanently be impaired by competition and while a large measure of short distance competition appears to us to be inevitable and to be of a nature which even with the control we suggest the railways will only partially be able to meet, we can find no reason why in the interests of the country as a whole railways should for the present at least be deprived of passengers and high grade goods over long distances. With the passage of time the general increase of trade and the development of specialised business, it may be that a different view will have to be taken. For the present we regard the maintenance of low railway rates for staple commodities and third class fares to be among the principal needs of the country and consider that motor transport should not be allowed to operate to the detriment of the railways involving possibly an increase of such rates and fares, unless it be in a field in which it offers unassailable advantages over anything which the railway can provide. The carriage of passengers and goods over long distances is, we consider, definitely outside that field.

One recommendation is that a system of "zoning" should be introduced whereby motor transport is generally restricted if not to particular routes at least to particular areas. This would require the modification of existing regulations and the registration of public service motor vehicles for certain routes or areas. We consider that it should

be possible for the competentauthority to prescribe the number of vehicles necessary for the legitimate business of the locality and to limit the number of licenses or permits issued accordingly and that, normally, while a permit issued in one district might by endorsement be extended by competent authority to some other district or area, such extensions should be the exception rather than the rule.

43. *Traffic advisory Boards.*—We realise that the application of these rules in such a manner would throw upon the registration authorities a considerable burden and the onus of determining in every case the number of vehicles economically necessary for the area, and in this connection we would draw attention to a suggestion which we understand to have been made to the effect that some kind of traffic advisory boards should be set up in different parts of the province to advise the authorities concerned upon this and other matters such as desirable amendments in existing regulations. While we are unable to make any definite suggestion in this matter we feel that, for the general case, zoning by districts might be unduly restricted while zoning by civil divisions would possibly allow of too wide a range for the individual vehicle. The precise determination of the zone for each particular centre would be a matter of some difficulty in which the advice and assistance of advisory boards would be of very great value, and we venture to record our opinion that in the general interests of the co-ordination of transport facilities as a whole such advisory boards would appear to us to be of very great benefit to the public.

CHAPTER V.—BRANCH LINE RAILWAY PROJECTS.

44. In the letter* to local Governments it was stated that we were to obtain information in the possession of local Governments and Railway Administrations of cases where branch lines have been projected but not constructed, but where a new or improved road might more economically serve the area. All the branch railways projected by the N. W. Railway during recent years have definitely been abandoned with the following exceptions :—

(*a*) Lyallpur Chananwala Railway and

(*b*) Quadian Beas Section of the Batala Beas Railway.

(a) *Lyallpur-Chananwala Railway.*—The length of this projected line is 110 miles and the estimated cost 143 lakhs. Its principal object appears to have been not so much to open up new country as to provide an alternative through route between Khushab and Bhatinda, *viâ* Lyallpur-Chananwala and Fazilka, and so relieve the main line to Delhi *viâ* Lahore. The Agent of the N. W. Railway stated that so far as he was able to judge from present conditions there was little likelihood of this line being required as a through connection, and in these circumstances on the assumption that this line will be abandoned we have proposed in Chapter VI the provision of a metalled road between OKARA and WASAWEWALA (HAVELE), and OKARA and JARANWALA. These roads would probably both affect this line adversely, if it were constructed.

(b) *Batala-Beas Railway.*—This line has been opened as far as Quadian and a certain amount of work has been done on the extension to the Beas where there is to be a junction with the N. W. main line. The Deputy Commissioner, Amritsar, informed us that among other important road schemes required by him was a direct road between Amritsar and Srigobindpur, and Srigobindpur and Batala. Moreover, there is a road part of which has been metalled between Beas and Srigobindpur. We have little doubt that these three roads would adequately serve the needs of this area, but would, at the same time adversely affect the traffic on the proposed railway. We, therefore, consider that this point should be borne in mind when the question of completing this line again comes up for consideration.

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* Government of India, Railway Department, No. 4255-T., dated 24th June 1932.

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

45. *Treatment of subject.*—The programme of future road development can best be considered in the light of the existing classification of roads, *i.e.*, in two parts (*a*) Class I roads, Provincial; and (*b*) roads of Classes II and III, District Board; although we must consider balanced development as a whole, and recent history suggests that the existing classification still appears to favour unbalanced development and may require some re-consideration.

46. *Class I Roads.*—As regards Class I or arterial roads, of which a list is given in Appendix No. 4, it is clear that, having regard to the relative fineness of the railway mesh over a large part of the province, no road system, unless broken up into a host of disconnected lengths, can fail to provide routes alternative, even when not closely parallel, to the railway; most of the existing parallelism is a legacy from previous generations but there can be little doubt that the completion of the arterial road system as planned some few years ago would, while not creating substantially new conditions in the province as a whole, have gone some way to aggravate the competitive potentialities of the arterial road system. Consequently in considering the pending programme for arterial roads, which we have assumed to be their eventual completion, as first class bridged and metalled roads, we have suggested certain cases in which, in our judgment, some modification in details of the alignment of lengths at present undeveloped or even the abandonment of certain projects would constitute a definite improvement from the broad angle of communications as a whole. We are agreed, however, that, even so, our suggestions must be regarded as being bound up with the question of the elimination or reduction of long distance road competition by some system of zoning, or otherwise, such as we have already suggested; and with this proviso we venture to suggest the following programme, the cost of which we have endeavoured to estimate approximately in Appendix No. 5 attached.

Very great progress has been made in the last year or two in surface treatment with tar or bitumen of existing metalled arterial roads, and we believe that with a few exceptions in cases of particularly heavy traffic this constitutes a very substantial economic improvement adequate for the probable needs of the next ten years; and that it will result in no small saving in maintenance charges. This surface treatment is now being carried out on a large scale out of the maintenance grant, and has progressed so far that its substantial completion, out of the savings in the maintenance grant in which it results, may be looked for with some confidence within the next 2 or 3 years, that is before financial circumstances will enable any comprehensive programme of development to be re-started. We therefore make no provision in the appended

programme for this but have allowed for some widening of the metalled surface, and for a little reconstruction in high class surfaces, in the form of approximate total mileage; beyond which we do not consider it necessary to make any provision in respect of arterial roads Nos. 1, 5, 7, 11, 13, 14, 15, 19, 20, 21, 22, 26, 27, 36, 37 and 42, *vide* the list at Appendix No. 4. For the rest we would suggest as follows :

47. *Arterial No. 2.*—With the exception of the crossing of the Chenab, this road has been completed and permanently bridged between Lahore and Khushab. At the Chenab crossing there is a boat bridge during the cold weather and a ferry during the hot weather and monsoon floods, and we do not think that the expenditure of perhaps some 20 or 30 lakhs on a permanent bridge here would be justifiable within the next ten years. Beyond Khushab this road as at present projected would run practically parallel with the railway to Mianwali cutting off a corner at Kundian junction. The country traversed by this alignment is barren and sparsely populated, and while it is a definite feature of the planning of the arterial road system that every district headquarters should be on it, we feel that the Khushab-Mianwali length would serve little or no purpose except that of through traffic necessarily in competition with the railway, and we venture to suggest that no further outlay should be incurred on it even as an unmetalled road. But we understand from Mr. Stubbs that the Salt Range is susceptible of considerable development and civilization by the provision of improved communications and that low type earth and gravel roads would be cheap, and we would suggest that this provincial artery should be extended from Khushab into the Salt Range by taking up the existing road, already partly completed by the District Board, to Nurewala and Kathwai. The metalling of this could we understand probably be completed for a sum of Rs. 21,000 and we have made provision accordingly. (Much of the metal has already been collected.) Should it eventually be decided to extend this road to Mianwali, it is for consideration whether this should not be done by an extension from Kathwai to Musa Khel on artery No. 10, though the gradients might be difficult and this length relatively expensive in first cost. However that may be, we consider the best line for the artery north of Khushab to be into the heart of the Salt Range unserved by railways and with great potentialities for low cost road development.

48. *Arterial No. 3. Lahore-Lyallpur-Gojra-Jhang-Bhakkar.*—We suggest that the parallel section Lyallpur-Gojra should be abandoned. An unmetalled feeder to the markets at Lyallpur and Gojra will suffice on this alignment and there is already a through metalled route *viâ* Samundri. The length from Gojra to Jhang we propose to include in another artery. Artery No. 3 however should, we think, be extended from Lyallpur *viâ* Narawala and Amipur to tap a fertile area and to meet artery No. 29 at Bhawana. Between Lyallpur and Narawala the road is metalled; beyond Narawala the metalling might be extended to the limits of canal irrigation, say 10 miles, and beyond that to Bhawana.

some 6 miles, an improved earth road should suffice. We have provided therefore for :—

	Rs.
10 miles metalled road at Rs. 20,000	2,00,000
6 miles improved unmetalled road at Rs. 1,000 . .	6,000

49. *Arterial No. 4. Lahore-Montgomery-Multan-Quetta.*—We assume that the metalling of this road between Bhai Pheru and Wan Radha Ram will be completed within the next two years, thus completing the road from Lahore to Montgomery. We recommend that the project should now be abandoned between Montgomery and Khanewal. An alternative through route *viâ* the Nili Bar road system can be completed at small expense by the provision of an important feeder, and a metalled road along the railway throughout the length Montgomery-Khanewal could not fail to be competitive and appears to be beyond the needs of local marketing which can be provided for, for the present, by an unmetalled road. We understand that the *mandi* at Chichawatni has suffered severely in recent years and that its principal handicap is the absence of right angle feeder roads ; and we suggest that until these are provided parallel development should be suspended. We recommend therefore that Montgomery-Khanewal be abandoned as an artery and that the road from Jahania to Multan—a length of 25 miles—be metalled at a cost of, say, Rs. 4,50,000.

50. *Link between Arteries Nos. 3 and 4.*—As an important feeder and link between arteries 3 and 4, we would like to suggest the provision of a metalled road, more or less along the Upper Chenab Canal, from near Mangtanwala to Balloki, utilising the bridge across the Balloki Weir. The length would be about 12 miles and the cost Rs. 2,40,000.

51. *Arterial No. 6. Delhi-Multan.*—The completion of the Multan Jahania road which we have proposed under No. 4 above is common to both that road and this. In fact, if our suggestions are accepted, the two will join at Arafwala. For the rest we consider that this road should be completed by filling the gaps between Hissar and Pakpattan. It may be that a traffic and soil survey will show that parts can serve for the next ten years as an improved unmetalled road ; but, in the absence of detailed information, we assume that the whole of the missing 100 miles will have to be metalled. Certain expensive bridges will also be required over the Ghaggar at Sirsa and over the Sutlej right bank canals at Sulemanki head unless in the latter case certain bridges provided for a projected railway now, we believe, abandoned can be adapted to the road. In the absence of further information we estimate the cost as—

	Rs.
100 miles of metalling at Rs. 20,000	20,00,000
Bridges	4,00,000

This is a scheme which should be discussed with the railway administratrtion before it is recommenced.

52. *Arterial No. 8. Campbellpur-Basal-Pindigheb-Talagang.*—We do not think there is any immediate necessity for the further improvement of the existing unmetalled road between Campbellpur and Basal which has been raised to a motorable standard. But we consider it important that this road should be completed as an unmetalled road for the 25 miles between Pindigheb and Talagang. The whole area round Talagang is devoid of any railway and at present largely devoid of good roads and we consider the opening of this area by low cost development of unmetalled roads to be of importance. We estimate the cost of this 25 miles at Rs. 2,000 per mile or a total of Rs. 50,000 and we consider that a bridge should be provided over the Soan river at Dhok Pathan for which we have suggested a sum of Rs. 2 lakhs.

53. *Arterial Road No. 9. Tarnaul-Khushalgarh.*—This road is metalled from Tarnaul up to about 10 miles beyond Fatehgang whence to Khushalgarh, where there is a combined railway and road bridge over the Indus, there is an unmetalled road usually passable in fair weather. It is parallel with the railway throughout and we cannot feel that its improvement or metalling can be of sufficient economic value to justify the expense. We, therefore, recommend that no further expenditure be incurred upon the development of this road.

54. *Arterial No. 10. Fatehgang-Dhokpathan-Talagang-Mianwali.*—This provides a through route from Rawalpindi *viâ* Tarnaul and Fatehgang to Mianwali, the length from Dhokpathan to Talagang being already provided by arterial road No. 8. We consider that the 8 miles between Khaur and Dhokpathan and the 48 miles between Talagang and Mianwali should be raised to the standard of an improved earth road at a cost of Rs. 2,000 per mile or say a total of Rs. 1,20,000. In addition we consider that expenditure on bridging of approximately Rs. 1,00,000 will be necessary. The works we propose will open up a light traffic road which should be of very great value to this area.

55. *Arterial Road No. 12. Jhelum (Sohawa)-Talagang.*—This road takes off from the grand trunk road at Sohawa about 25 miles north of Jhelum and about 16 miles south of Mandra, whence the Mandra-Bhaun branch railway takes off from the N. W. Railway main line. From Sohawa the road gradually converges on the branch railway which it meets at Chakwal some 35 miles from Sohawa, and this length, we consider should be left as it is as an improved and fair weather unmetalled road. Although the terminus of the branch railway is at Bhaun, the most important place on it is Chakwal, and adequate connections between this station and the surrounding country are greatly needed. We, therefore, consider it most important that this artery should be extended and that the portion from Chakwal to Talagang, a length of approximately 25 miles, should be re-aligned, improved as an unmetalled earth road and be bridged. We estimate the cost of the re-alignment and improvement at Rs. 5,000 per mile or a total of Rs. 1,25,000 and the necessary bridging at Rs. 1 lakh ; or a total of Rs. 2,25,000.

56. *Arterial Road No. 17. Ferozepore-Fazilka.*—This arterial road was planned as a connecting link south of the Sutlej between arteries Nos. 5

and 6 but it runs throughout parallel with the railway and we doubt whether there is any great necessity for the metalling of this, except in short lengths where the soil is bad, to serve as a feeder road. Its principal utility would appear to us to be as a long distance through communication and in existing circumstances it might be postponed for the present. Other proposals, in connection with the development of class II roads, will provide a circuitous metalled road between these two terminals *viâ* Kotkapura, Muktsar, Malaut and Abohar.

57. *Arterial Road No. 18. Jullundur-Hoshiarpur-Dharmsala.*—We consider that this road will serve as useful feeder to the railways at Ranital and Hoshiarpur or Jullundur and that as such the existing arrangements at the Beas River, that is to say a boat bridge in the dry season and a ferry during the flood season, will suffice. The road itself is however, we understand, in need of certain further improvements up to a reasonable standard as an unmetalled hill road and we estimate that approximately a sum of Rs. 5 lakhs might be provided for this purpose.

58. *Arterial Road No. 23. Sohna-Rewari.*—We consider that the completion of this road is desirable as opening up communications in a badly served area. We do not think that its completion, which would provide through communication from Gurgaon to Rewari by a circuitous route of nearly 50 miles as compared with 33 miles by railway, should adversely affect passenger earnings on the railway, and we therefore recommended that the remaining 20 miles of this road should be metalled. For this we roughly estimate the cost will be Rs. 12,000 per mile or a total of Rs. 2,40,000.

59. *Arterial Road No. 24. Muzaffargarh-Alipur.*—We consider that this road might be extended as an improved unmetalled road from Alipur up to the Panjnad weir, over which there is we understand a light traffic road bridge. The extension of this road beyond this bridge to Dera Nawab would lie in Bahawalpur territory and would have to be carried out by the Durbar. We estimate the cost of completing a fair weather road up to the bridge in the Punjab at Rs. 10,000.

60. *Arterial Road No. 25. Dera Ghazi Khan-Mithankot.*—This is almost entirely a fair weather improved earth road which adequately serves the needs of the district. We consider that it might with advantage be extended to make connection with the rail head at Kashmor. This would involve an additional 60 miles of unmetalled road which we estimate would cost, with a certain amount of bridging or causeways over hill torrents, about Rs. 2,000 per mile or a total of Rs. 1,20,000.

61. *Arterial Road No. 28. Lyallpur-Sargodha.*—We consider that cross roads of this character connecting important *mandis* are of great value not only as feeders to the *mandis* but also as providing through road communications between neighbouring canal colonies. The road at present consists of a few miles of metalling at the Sargodha end with about 10 miles of improved earth road from the end of the metalled road up to the district boundary. In addition a combined road and

railway bridge has recently been provided over the Chenab at Chiniot. It cannot be denied that the completion of this through road will tend to decrease the passenger earnings of the recently constructed Chak Jhumra-Hundewali branch railway. But, the bridge having been provided, it does not appear to be possible to re-align this road so as to serve its primary purpose on some alignment less damaging to the railway. We therefore contemplate that the metalling of this road will have to be completed, *i.e.*, 50 miles at a cost of Rs. 20,000 per mile or Rs. 10 lakhs. We are emphatic however that before any further expenditure is incurred the question should be discussed again with N. W. Railway with a view to finding some agreed solution. In such a case as this if it is admitted that the road is necessary as a feeder and on general grounds, but that it is not desirable that it should deprive the railway of passenger traffic between Sargodha and Lyallpur, it might be practicable by zoning and, or, by the imposition of a toll on buses on the Chenab bridge, to restrict undesirable and uneconomic competition.

62. *Arterial Road No. 29. Sambrial-Gujranwala-Pindi Bhattian-Jhang.*—This road exists as a metalled road from Sambrial to Hafizabad and as an improved unmetalled road from Pindi Bhattian to Jhang. We recommend that the length between Hafizabad and Pindi Bhattian, *viâ* Jalalpur Nau, should be completed as an improved unmetalled road. The length of this is 35 miles and the cost we estimate at Rs. 750 per mile or a total of Rs. 26,000.

63. *Arterial Road No. 31. Lahore-Moga.*—We consider that this through communication can be completed without detriment to railway interests. Indeed we believe that it would act as a feeder. We therefore advise that the metalling of this road from near Patti to the Sutlej at Harike Pattan should be completed and that a boat bridge should be provided over the Sutlej at that place. South of the Sutlej we would recommend that, in deference to the opinion expressed by the Deputy Commissioner and others in Ferozepore, that road should be aligned somewhat circuitously from Makhu *viâ* Zira to Kot Ise Khan. In view of the existence of a metalled road from Zira to the Ludhiana-Ferozepore road we do not think that this artery need be metalled beyond Zira. Our recommendation is therefore that, in addition to the provision of a boat bridge, some 24 miles between Zira and near Patti should be metalled while the 8 miles between Zira and Kot Ise Khan might be raised to the standard of an improved earth road. The cost of our proposals would be somewhat as follows :—

	Rs.
A boat bridge at Harike Pattan	4,00,000
Metalling 25 miles at Rs. 20,000	5,00,000
Improving 8 miles of earth road at Rs. 1,000 . .	8,000
TOTAL .	9,08,000

64. *Arterial Road No. 32. Jaranwala-Okara.*—We consider that this road should be completed as it will constitute a valuable feeder. More-

over it should be extended from Okara through Dipalpur to join the Sutlej Valley railway and arterial road No. 6 at Haveli where there is to be a *mandi*. This extension is necessary in the interests of the recently irrigated area in the Dipalpur Tahsil as part of the Sutlej Valley Irrigation scheme. Our proposals, therefore, are that 32 miles between Jaranwala and Okara, 10 miles between Okara and Dipalpur and 20 miles from Dipalpur, *viâ* the Chunian-Haveli Road, to Haveli, should be metalled, *i.e.*, a total of 52 miles at an approximate cost of Rs. 20,000 per mile or Rs. 12,40,000. In addition we consider that a boat bridge should be provided over the Ravi at Sayadwala and that this should be possible for a sum of approximately Rs. 2 lakhs. We make these proposals on the assumption that the projected Lyallpur-Chananwala Railway is abandoned.

65. *Arterial Road No. 34. Amritsar-Sialkot.*—The road being already metalled from Amritsar to Chak Ram Das and from Pasrur to Sialkot, and a combined road and railway bridge having recently been provided over the Ravi, the completion of this road appears to be inevitable. We fear that, unless zoning is definitely adopted as a policy, the completion of this road must damage the earnings of the Verka Narowal Sialkot Railway, part of which at least is already running at a loss ; and here again possibly a substantial toll on buses and lorries on the Ravi bridge might assist in making the zoning effective. Owing to the recent construction of the Shahdara Narowal Railway, we think Baddomali will become an important trading centre and market for its surrounding area and, at the expense of increasing the milage of the through road, we recommend that it should be re-aligned from Narowal to meet the old Pasrur-Raya Road near Baddomali and follow that road into Pasrur. A link to Baddomali should be added. The completion of the arterial road on this alignment will involve the metalling of 40 miles at approximately Rs. 20,000 per mile or a total of Rs. 8 lakhs and will also require the provision of a bridge over the Deg which we consider might be of the submersible type and which we estimate very approximately would cost Rs. 3 lakhs. Sialkot District is almost entirely cut in two by the Deg which has no road bridge in any part of the district and we consider that the local benefit resulting from completing the through road with the bridge over the Deg will be very great. At the same time, before any further expenditure is incurred, the scheme should be discussed again with the N. W. Railway. Possibly a metalled road Pasrur to Baddomali and an improved earth road for the balance may suffice for the early future.

66. *Arterial Road No. 35. Gojra-Shorkot.*—This at present exists as an improved unmetalled road between Gojra and Shorkot Road junction and as a short metalled road from the junction to Shorkot town. We suggest that this road might be abandoned as an artery and that the parallel part should be maintained merely as an earth road, as an agricultural feeder to the *mandis* of Gojra and Toba Tek Singh.

67. *Arterial Road No. 39. Toba Tek Singh-Chichawatni-Burewala.*—We have already referred to the fact that Chichawatni *mandi* has suffered

in comparison with its neighbours owing to the absence of lateral feeder communications. The construction of the Burewala Sheikh Fazl road as part of the Nili Bar scheme has diverted traffic from Chichawatni to Burewala. We believe that the absence of a metalled road between Sheikh Fazl and Chichawatni not only damages the established *mandi* at the latter place but also leads the producer to carry his produce over a longer distance than is economic. North of the Ravi in the neighbourhood of Kamalia there has been a recent extension of irrigation and we understand that a new *mandi* is to be established at a station near Kamalia; and with the proviso that for Kamalia should be read the name of the place at which this *mandi* is to be established, we consider that the road should be completed as a metalled road from Sheikh Fazl through Chichawatni up to Kamalia, including the provision of a boat bridge over the Ravi. North of Kamalia we propose a substantial alteration. The whole area served by the Gojra and Toba Tek Singh *mandis* that lies south-west of the Gojra-Tandlianwala road is without adequate road facilities, and, for this reason, and because we consider that the Gojra-Jhang road should be part of the arterial system, we recommend that the artery should be re-aligned from Kamalia through Gojra to Jhang and that this length should be metalled completely. In passing we may mention that we have proposed in connection with class II roads that the road from Kamalia to Toba Tek Singh should also be metalled as a *mandi* feeder. Our proposals in respect of this arterial road involve therefore the metalling of 80 miles at a cost of Rs. 20,000 a mile or a total of Rs. 16 lakhs; and in addition a sum of Rs. 2 lakhs should be provided for a boat bridge over the Ravi north of Chichawatni.

68. *Arterial Road No. 41. Kabirwala-Jhang.*—We do not consider that any development expenditure should be incurred upon this road at present. In fact it might be relegated to class II until such time as the Haveli irrigation project is taken in hand and the desert area, through which the road now passes north of the Ravi, is irrigated.

69. *General proposals.*—In addition to the above we think that provision should also be made for the improvement as unmetalled roads of the shorter link roads from the arterial system to various railway stations where these do not exist at present. We roughly estimate that the total length involved might be about 100 miles and that the cost of improvement might be about Rs. 1,000 per mile or a total of Rs. 1 lakh. We further propose that since the maintenance of short feeder roads to the arterial system can best be carried out by the authority in charge of the parent road, provision should be made as part of the arterial development for improved unmetalled short feeder roads, under 5 miles in length, to towns and large villages lying within that distance of the arteries that are not at present connected with them. We estimate very roughly that this would involve a total length of about 500 miles and that on the average the necessary improvement could be carried out at a cost of Rs. 500 per mile or a total of Rs. 2,50,000.

70. *Intermediate stage development.*—It will be seen that the cost of improving earth roads in easy country and good soil is estimated at from Rs. 500 to Rs. 1,000 per mile. It also appears that except in peculiarly favourable conditions we have been constrained to estimate the cost of metalling at Rs. 20,000 per mile or thereabouts. It appears that some intermediate type or stage of development is necessary when the traffic exceeds the capacity of an earth road but may not justify the cost of metalling. A fuller reference to this intermediate stage is made in dealing with class II roads, and here it will suffice to say that 5 per cent. of the unmetalled milage in this class may have to be carried to the next stage, and that we have suggested provision accordingly. If experiments with this type of development prove successful the full metalling programme might be curtailed, and be carried out partly in stages.

71. *Classes II and III Roads.*—We have considered further the development on roads in charge of District Boards necessary for a co-ordinated plan. Various plans for the improvement or metalling of specific roads have been mooted from time to time, as well as general plans for an all-round improvement of unmetalled roads. The latter had great possibilities and is clearly necessary. We have also considered specific proposals, district by district, and would suggest as follows.

72. *Hissar.*—There is a considerable demand, we understand, for the metalling of the Hansi-Bhiwani road which is parallel with the B., B. and C. I. Metre Gauge Railway. This road has already been improved as an unmetalled road and is motorable, and we are in doubt as to the justification for its metalling since it would undoubtedly compete for passengers with the railway. We suggest, however, that the propriety of metalling the road from Hissar to Tosham and from Tosham to Bhiwani should be investigated. This would open up a part of the district which is at present badly served, although it would possibly short-circuit the railways between Bhiwani and Hissar. We have in our estimates included the metalling of this 37 miles at a cost of approximately Rs. 4,40,000, but, before a decision is taken, opportunity should be given to the Railway Administrations to express their views in the matter.

73. *Rohtak.*—The principal need of this district appears to be for a connection by a metalled road between Jhajjar and Rewari and we propose this which, in this district, amounts to 14 miles at an estimated cost of Rs. 12,000 a mile, or Rs. 1,68,000.

74. *Gurgaon.*—As a complement to the above proposal we suggest the metalling of the Jhajjar-Rewari Road in this district also, 14 miles at an estimated cost of Rs. 12,000 per mile or a total of Rs. 1,68,000. In addition, while a great deal remains to be done in the improvement of existing earth roads, we consider that the needs of the district require the provision of a metalled road between Hodal and Ferozepore Jhirka. This amounts to 30 miles in length and the cost, at Rs. 15,000 a mile, would be Rs. 4,50,000.

75. *Karnal.*—We consider that the road from Pundri to Rajaund should be metalled as a feeder. The length would be about 14 miles and the cost, at Rs. 15,000 per mile, Rs. 2,10,000.

76. *Ambala.*—We recommend that the existing metalled road from Ambala to Naraingarh should be extended 8 miles to Kala Amb at a cost of Rs. 10,000 per mile, or Rs. 80,000. We also consider that as the soil is poor, that portion of the Ambala-Kaithal road lying in Ambala district should be metalled as a feeder. This would be 13 miles in length at Rs. 15,000 per mile, say Rs. 1·95 lakhs. But one of the principal defects of road communications in Ambala as in other sub-montane districts is the absence of bridges and causeways. We are unable in the time available to estimate the cost of providing submersible bridges or causeways over the many hill torrents which exist on various roads, such as the Markanda on the Ambala-Kala Amb Road and the five main crossings on the Rupar-Chandigarh Road, but we have tentatively put down a lump sum of Rs. 10 lakhs as a desirable expenditure for this purpose.

77. *Kangra.*—Certain approach roads are required to stations on the Kangra Valley Railway, and as improved unmetalled roads should normally suffice, we have set down a small sum of Rs. 15,000 for this. Having regard to the circumstances of the district, we consider that the improvement of existing unmetalled roads to a fair weather standard is all that can be attempted at present and that, in addition, a vigorous policy of bridging the many streams and nallahs should be prosecuted. We therefore in this case also suggest as an approximation that a sum of Rs. 10 lakhs could easily be spent with great advantage on bridges and causeways in this district. This would tend to open up trade, both imports and exports, and enable the district to make use of the neighbouring arterial roads and railways.

78. *Hoshiarpur.*—This is another case of a sub-montane district in which the distinctive feature is the very large number of unbridged crossings over the *chos* on various roads, which present long lengths of dry sand for most of the year and at other times run in rapid torrents. The provision of causeways over these appears to be by far the greatest need of the district and we have tentatively set down a provision of Rs. 15 lakhs for this purpose which we feel to be justifiable for this very great need.

79. *Jullundur.*—Beyond the general improvement of unmetalled roads, for which we are making a lump sum provision for the whole province, we do not recommend any scheme.

80. *Ferozepore.*—In this district we have already recommended that no further expenditure should be incurred upon arterial road No. 17, but we consider that for the purposes of agricultural feeders two roads, that is to say, from Muktesar to Jalalabad and from Muktesar to Malaut, should be metalled. These aggregate to 36 miles which we estimate to cost some Rs. 15,000 per mile or a total of Rs. 5,40,000.

81. *Ludhiana.*—We recommend the provision of a metalled feeder road through a somewhat sandy tract of country from the Canal bridge, on the metalled road between Jagraon and Basian, to Hathur. This small length would amount to 12 miles and the cost Rs. 8,000 per mile, or say Rs. 1 lakh. In addition we recommend the provision of 2 new feeder roads from the Ludhiana-Ferozepore road between Ludhiana and Jagraon in the direction of the Sutlej. These would be about 10 miles in length each and as they would be entirely new roads we have provided for 20 miles at Rs. 1,500 per mile, a sum of Rs. 30,000.

82. *Amritsar.*—(*a*) There is a considerable local demand for the metalling of the road from Amritsar to Bhikiwind to link with artery No. 31 and with the metalled road from Bhikiwind to Kasur. This is clearly a desirable feeder road but would also, unless some system of zoning is enforced, be competitive for through passenger traffic with the Amritsar-Kasur Railway. Doubtless before the scheme was undertaken, it would be fully discussed with the Railway Administration, and in the meantime we suggest a provision for the metalling of this 17 miles at Rs. 14,000 per mile of Rs. 2,38,000.

(*b*) On the assumption that the Batala Sri-Gobindpur Beas Railway project will now be abandoned, we agree that the local demand for an improved road between Amritsar and Sri-Gobindpur should, if possible, be conceded. We do not consider that it will be necessary to metal the whole of this, and, subject to a more detailed survey, we have suggested that about half of the road where traffic will concentrate should be metalled and the other half improved as an unmetalled motorable road. The latter will fall within the general provision which we propose to make and we here set down merely the provision for metalling 14 miles of this road at Rs. 14,000 per mile, or say Rs. 1·96 lakhs.

(*c*) The Deputy Commissioner also pressed strongly for the metalling of the Amritsar-Gujranwala road as far as the Ravi. This road is an improved unmetalled road and we doubt whether its metalling is essential. We consider, however, that the requirements of the outlying area near the Ravi would be met to a great extent by metalling the Amritsar-Gujranwala road between Lopeke and the river and completing the connection between Lopeke and the Grand Trunk Road at Attari by a metalled road. This would involve the metalling of 12 miles at an estimated cost of Rs. 14,000 per mile or Rs. 1·68 lakhs.

83. *Gurdaspur.*—On the assumption that the Batala Sri-Gobindpur railway project is to be abandoned, we consider that the road from Batala to Sri-Gobindpur should be metalled and we propose this length of 18 miles at an estimated cost of Rs. 20,000 per mile, or say Rs. 3,60,000. We also suggest for bridging in this district, a sum of Rs. 1 lakh.

84. *Lahore.*—Complementary with the proposal made in Amritsar we suggest provision for metalling 4 miles of the Amritsar-Bhikiwind road in the Lahore district at a cost of Rs. 15,000 per mile or a total of Rs. 60,000. We consider also that the important railway station and junction of Raewind should be connected with the Lahore-Multan

arterial road at Manga by a metalled road. The length will be 10 miles and the cost at Rs. 15,000 per mile or Rs. 1,50,000. We also recommend in the interests of feeder development that the road from Chunian to Khudian and Ganda Singh Wala which is 35 miles in length, and the road from Hujra to Chunian, which is 10 miles in Lahore district, should be metalled ; that is we recommend 45 miles of new metalling radiating round Chunian, at a cost of Rs. 20,000 per mile or Rs. 9 lakhs. A total for the district of Rs. 11·10 lakhs.

85. *Sialkot.*—This district is very densely populated and there is no very great export of agricultural produce. The general conditions are favourable to the development of improved unmetalled roads, beyond which the greatest need of the district appears to be for bridges or causeways across the Deg Nallah. We have already suggested that artery No. 34 should be realigned and include a bridge over the Deg some 6 miles down stream of the existing railway bridge and we consider that another bridge over the Deg is required opposite Zaffarwal to enable that town to be connected with the railway at Chawinda and with Sialkot and we have suggested Rs. 3 lakhs for this.

86. *Gujranwala.*—The only specific proposal we have to make in this district is that, as a feeder, the road from Gujranwala to Akalgarh should be metalled. This would also short-circuit the N. W. R. and the Railway Administration should be consulted before a decision is taken. The length is 23 miles and the estimated cost Rs. 15,000 per mile or Rs. 3,45,000.

87. *Sheikhupura.*—We consider that a most useful agricultural feeder would be provided by the metalling, which in existing circumstances appears to be necessary, of the road from Mangatanwala on artery No. 3 to Nankana Sahib, Manawala and Chuharkana, a distance of 30 miles, at Rs. 20,000 per mile or Rs. 6 lakhs. We also consider that the road from Manawala to Shahkot should be metalled, to link up with the metalled road from Shahkot to Sangla at which latter place there is a *mandi*. The length of this would be 10 miles and the cost, at Rs. 20,000 per mile, Rs. 2 lakhs.

88. *Gujrat.*—The road from Gujrat to Kunjah and Phalia, which is partly metalled, partly improved and partly unimproved unmetalled, crosses the Bhimber Nallah a few miles from Gujrat at a place where there is no bridge. A new bridge has recently been built over the Bhimber on the Grand Trunk Road and we consider that a link should be provided from north of this bridge to the Kunjah-Phalia road. The length would be about 5 miles and the cost for a metalled road at Rs. 15,000 per mile Rs. 75,000. The Gujrat-Kunjah-Phalia road is part of an artery which was once projected between Gujrat and Sargodha but was held in abeyance pending the consideration of a projected railway along the same alignment. The railway project has now been abandoned and the development of the arterial road may be reconsidered. We consider, however, that before any expenditure is incurred upon further metalling of this artery adequate short feeder facilities from the area through

which it passes to the various *mandis* should be provided and that the provision of a metalled road from Kadirabad to Rukan and Miana Gondal to connect with the metalled road from that place to Phulerwan *Mandi* should take precedence. The length of this new feeder would be about 20 miles and the estimated cost at Rs. 15,000 per mile, about Rs. 3 lakhs. A sum of Rs. 2 lakhs should also be provided for bridging; the wooden bridges on the Jalalpur road are in a dilapidated condition, and some minor bridges are still needed in the colony area.

Finally we have been impressed with the necessity of affording more adequate outlets from the Salt Range, one of which we consider should be a road from Choa Saidan Shah to Pind Dadan Khan and the Haranpur bridge north of Malakwal. This would fall in Jhelum district, but in Gujrat we recommend the provision of 4 miles of metalled road from Malakwal to the Haranpur bridge to afford outlet from the Salt Range to Malakwal station. These 4 miles we estimate should be built for Rs. 40,000.

89. *Jhelum.*—We have already referred to the necessity of affording an outlet from the Salt Range and we suggest that the steeply graded part of the Choa Saidan Shah-Khewra road might be realigned, for which we have put down a lump sum of Rs. 50,000. The road from Khewra to the Haranpur bridge should also possibly be metalled; this should cost Rs. 1,40,000 at an estimated cost of Rs. 10,000 a mile for 14 miles. The general internal development of the Salt Range roads can, we believe, be easily carried out as part of the general improvement programme for which we are suggesting separate provision.

90. *Rawalpindi.*—There is a considerable demand for the extension and bridging of the Sihala-Kabuta-Lachhman Pattan road which would involve the provision of one bridge and one causeway over the Ling river and the extension of the metalling to Lachhman Pattan. This we roughly estimate would cost Rs. 2,50,000 in all. There is also a considerable demand for the provision of a metalled road between Kahuta and Mandra or Gujar Khan to enable trade to find its way to Gujar Khan with which the commercial connection of Poonch State is now said to be. We are, however, unable to make any suggestions without more detailed consideration.

91. *Attock.*—With the general improvement of unmetalled roads there would remain the necessity for certain bridges or causeways, *e.g.*, over the Kala Nallah, and we have put down an approximate lump sum of Rs. 50,000 for more urgent works of this nature.

92. *Mianwali.*—We have no specific recommendations to make.

93. *Montgomery.*—We have already proposed that the road from Okara to Dipalpur and Haveli should be metalled as an artery, and we would now add the metalling of the road from Dipalpur to Hujra and Chunian, part of which we have already proposed in the Lahore district, the length here being 20 miles and the cost, at Rs. 20,000 per mile, Rs. 4 lakhs.

94. *Lyallpur.*—With the proposed realignment of the arterial road from Kamalia to Gojra the necessity for a metalled feeder road between Kamalia and Tandlianwala will, we think, remain. This, with the general improvement of unmetalled roads, should suffice for the immediate future and we recommend the metalling of this road which is 20 miles long at a cost of Rs. 20,000 per mile, or say Rs. 4 lakhs.

We have no specific proposals to make with respect to the remaining districts of Jhang, Multan, Muzaffargarh, and Dera Ghazi Khan.

95. *General improvement of unmetalled roads.*—Excluding village roads, there are at present in charge of District Boards some 20,000 miles of unmetalled roads in Classes II and III of which some 4,600 miles have already been improved. We consider that the possibility of a very great improvement of unmetalled roads at a reasonable cost has been demonstrated beyond doubt and that the principal requirement of the future in the improvement of rural communications is the all-round improvement of as large a milage of existing earth roads as possible. We therefore suggest that, when development is possible, one of the first steps should be an attack upon this problem and we have tentatively set down as the object to be aimed at, the improvement of a further 10,000 miles of unmetalled roads of Classes II and III at an average cost of Rs. 500 a mile or a total of Rs. 50 lakhs. Over and above this, we feel that, as traffic develops on these improved roads, it will be found that a certain proportion can no longer be economically and adequately maintained for increased traffic as untreated earth and we consider that the necessity for raising a proportion of the earth road milage to a stage intermediate between earth and metalling should definitely be envisaged. We understand that experiments have been made which suggest that for light traffic a road constructed of brick-on-edge soling with a surface treatment of tar or bitumen and hard gravel is quite satisfactory. This properly constitutes an intermediate stage since it provides a foundation for the subsequent building up of a stronger crust. In the rough estimate of cost of these proposals which we attach we have made provision for this intermediate stage development on 5 per cent. of the milage of earth roads at a cost of Rs. 10,000 per mile, but it is possible that experiment will show that the class of the light surfacing such as we contemplate can be carried out at a lower cost. Experiments in this connection are proceeding, but if the principle of stage development, which has been adopted elsewhere and which appears to be inevitable if the greatest use is to be made of the available funds, is to be followed in the Punjab and India generally, we feel that, in order to evolve the most economical and satisfactory method for different localities and to reduce the cost of the intermediate stage to the lowest possible figure, there is large scope for extended experiments, in which the possibility of "trackways" should not be forgotten.

96. *Feeder Roads to Railways.*—We have had considerable evidence as to the lack of feeder road facilities to railway stations in general and particularly to those on newly constructed branch lines; and we feel

that this is a matter which should receive particular attention. It has not been possible in the time at our disposal to attempt a detailed survey of these requirements, but we consider that in making provision for the general improvement of 10,000 miles of unmetalled road, particular attention should be paid to the adequate provision of feeders to railway stations. It may be that in certain cases, owing to soil or other conditions, an improved unmetalled road, or even the intermediate stage road, may not suffice. We are, however, unable to attempt any estimate of the milage of metalled roads which it might be necessary to provide in this connection, but our programme is necessarily merely a rough outline or skeleton which gives a general picture of the development necessary, within which particular needs of this sort can be dealt with.

The N. W. Railway Administration have furnished us with a list of feeder roads which they would wish to see constructed or improved, and after deleting those which have already been provided or will be under our specific proposals, we give in Appendix 7 attached an abstract of that list. It cannot be considered to be exhaustive.

97. *Proposals summarised.*—The schemes and projects included in the programme outlined in the preceding paragraphs have, with few exceptions, been proposed and discussed at various times in connection with different programmes of development. Our task has been merely to bring them together and to suggest the possibility of certain modifications. For facility of reference we have dealt separately with the development of roads in provincial and district board charge respectively, but the object being balanced development we would emphasise that we consider the proposals in the latter category to be if anything of greater importance than those in the former. A well balanced and consistent road system is, we venture to suggest, of provincial importance, and while the classification of roads for administrative purposes into provincial and local has many advantages, these should not be permitted to disguise the fact that the attainment of such a road system should be a provincial objective towards which the resources of the province should be impartially directed.

In Appendices Nos. 5 and 6 we have set down a summary of the proposals and a rough approximation of the cost involved in respect not only of first cost but also of the additional cost for maintenance. The crucial test of any development programme is of course not the original outlay involved so much as the eventual ability to maintain, and it is important to emphasise this point. In this case, however, we believe that the manner in which we have presented the matter possibly overstates the new liability. We are not clear for instance as to the extent to which provision for the maintenance of improved earth roads already exists in the provincial budget or in the budgets of local bodies and the consolidated and other grants made to local bodies from provincial revenues, but we believe that in theory at least local bodies are already furnished with funds adequate for the purpose. In the matter of metalled roads we have already referred to the savings now being effected,

e.g., by surface treatments, and it has been suggested that with a wide extension of surface treatments the savings may be substantial and that a considerable additional mileage might be maintained with present standard grants. We regard therefore our figures of the additional cost of maintenance resulting from the proposals as suggestive only, and we think that the whole question would have to be re-examined on the basis of the total mileage of different classes that will be at charge if these proposals are carried out and in the light of recent developments. With this reservation we would state that, as far as we have been able to calculate, the cost of maintaining the additional mileage of various classes which we have proposed would amount to Rs. 24·78 or say Rs. 25 lakhs per annum.

Our proposals for new expenditure may be summarised as follows :—

——	Class I.	Classes II and III.	Total.
	Rs. Lakhs.	Rs. Lakhs.	Rs. Lakhs.
Improved earth roads . . .	13·15	50·95	64·10
Intermediate stage development .	7·00	75·00	82·00
Metalling	122·91	69·79	192·70
Bridging	19·00	43·00	62·00
	162·06	238·74	400·80

The period over which such a programme must be spread depends upon many considerations, but as a basis of discussion we contemplate about ten years. The programme amounts to Rs. 4 crores and if it is to be carried out in ten years a sum of Rs. 40 lakhs per year will be required. To this must be added the additional sum required for maintenance which would be *nil* in the first year and might increase to Rs. 25 lakhs in the eleventh and subsequent years. The amount required for development is a substantial sum but would not appear to be impossible when things improve in view of the sums recently spent by the Punjab in road development; and, as substantial benefits would result from such a programme, we consider that it is one which might be seriously considered. In any event it is desirable that whatever expenditure may be possible should be applied towards such a programme of balanced deves lopment, the most essential parts being given preference without regard to classification.

98. *Road Loans.*—Suggestions have, however, been made from time to time in various quarters to the effect that the immediate requirements of road development cannot be met for a very long time out of revenue, and that if any impression is to be made on the problem before us, the application of capital, derived from loans or special road bonds, will be necessary. Such proposals have heretofore been somewhat nebulous and have not attempted to define the extent and the class of work which might suitably be charged to capital. But having sketched the outlines of a programme of development, it is possible for us to examine to what

extent the application of loan funds thereto would be appropriate, and in Appendix No. 8 we have suggested the extent to which loan funds might be applied. Setting aside for a moment the question of the provision of bridges, the conclusion appears to be that only a part of the road construction works which we contemplate can be debited to loan, and that on a 15-year loan period at 5 per cent. interest the equated payments would amount to 9·634 per cent. The effect of debiting 75 per cent. of the cost of metalling and 50 per cent. of the cost of intermediate stage development on a 15-year basis and the whole of the cost of bridging on a 30-year basis to loans and of adding to the revenue outlay thus resulting the additional cost of maintenance, assuming that the whole programme is divided into equal yearly parts and that the whole liability for maintenance commences in the year after which the work is carried out, is shown in Appendix No. 9 attached, and is compared with the effect of carrying out the whole programme out of revenue.

From this statement it will be seen that out of the total yearly outlay of Rs. 40 lakhs Rs. 15·25 lakhs will have to be found from revenue while Rs. 24·75 lakhs can be charged to capital. The result at the end of 10 years will be that while, in that time, on a revenue basis, Rs. 400 lakhs would have to have been found from revenue for the works outlay, even if part of the cost is charged to capital as proposed, by the end of 10 years Rs. 220 lakhs more or less would have to have been provided from revenue. Thus the debiting of part of the cost to loan would save the revenue position over the first 10 years to the extent of about Rs. 180 lakhs out of the total of Rs. 400 lakhs. At the end of the 26th year, by which time all the 15-year capital will have been paid off, it will be seen that the total outlay from revenue will have amounted to about Rs. 503 lakhs while there will still remain an outstanding debt on the bridging programme of Rs. 4 lakhs per annum from the 26th year to the 30th year which will then gradually decline until it is completely paid off in the 36th year. The additional eventual cost of proceeding by way of capital borrowings is thus seen to be in the neighbourhood of Rs. one crore in 26 years and it is clear that the whole matter requires very careful consideration and examination before it could be said that it is worth incurring such an additional total outlay in order to expedite the programme to the extent of being able to spend Rs. 400 lakhs in the first 10 years instead of only Rs. 220 lakhs.

We have referred to this matter and have attempted an approximate calculation of the effect of using loan funds, because we think it desirable that the discussion of this aspect of the question should be brought into some clearer focus than has been the case in the past.

CHAPTER VII.—SUMMARY OF CONCLUSIONS.

Chapter II.—General Condition of Roads.

(1) There is large scope for the development of unimproved metal roads to provide facilities for marketing. (Para. 9.)

(2) The development and maintenance of Provincial Roads has greatly outstripped that of District Board Roads; in our future road development we consider the limitations imposed by the present administrative classification of roads should be set aside. (Para. 11.)

(3) The existing railways in the province have a relatively small mesh and there is little scope for further branch lines; there is, further, little scope for constructing entirely new roads; present requirements of road development lie rather in the direction of improving and bridging the present road system. (Para. 12.)

(4) To provide adequately for motor traffic, and, at the same time, to reduce cost of maintenance the tarring of metalled roads is being pushed on as rapidly as possible. (Para. 13.)

Chapter III.—Existing State of Motor Competition with Railways.

(5) The N. W. Railway is at present working much below its capacity principally owing to the trade depression. (Para. 15.)

(6) About 1,400 miles of metalled road in the Province run parallel with the Railway, and there are many bus services on these roads running in direct competition with the Railway. (Para. 16.)

(7) An accurate estimate of the loss of passenger revenue to the N. W. Railway owing to motor competition is, at present, impossible; but we think there are some grounds for placing this at a figure of Rs. 39 lakhs a year for the N. W. Railway as a whole, and Rs. 33 lakhs for the N. W. lines serving the Punjab. (Paras. 17 and 18.)

(8) While motor bus competition is generally confined to short distance traffic, there are signs that it may extend its radius of activities. (Paras. 19 and 20.)

(9) Goods traffic is beginning to be carried by motor transport, and agencies for this have sprung up in Amritsar. The traffic is mostly high grade traffic, and is being conveyed for relatively long distances. The N. W. Railway estimate a loss of Rs. 4½ lakhs due to this traffic last year. (Paras. 21-24.)

(10). The convenience of passenger motor buses for short distances must be conceded, but the Railway can to a certain extent meet the competition by running more suitably timed local trains, by reducing fares, and by introducing return tickets. (Para. 26.)

(11) The convenience of a motor transport "Door-to-door" goods service cannot be denied; but the railway might meet this by extending collection and delivery facilities. (Para. 27.)

(12) Passenger buses are generally overcrowded; they are not run to any time table; no fare tables are exhibited on them; no redress can usually be obtained for injury or death due to negligent driving. (Para. 28.)

(13) There is an excess number of buses in the Province for the traffic offering; in consequence of this in many cases uneconomic fares and rates are being charged by bus drivers, and buses and lorries are being systematically overloaded to recover working expenses. (Para. 29.)

(14) The N. W. Railway complains of the unfair operation of Municipal Terminal Tax, which diverts traffic from the rail to the road because (*a*) it is either not levied on road traffic or (*b*) when levied on road traffic, its collection is not so strictly enforced as in rail traffic. (Para. 30.)

(15) The N. W. Railway Administration complains that the present bus competition is unfair because:—

(*a*) A stricter inspection is imposed on Railway Rolling Stock than on passenger buses.

(*b*) Buses are systematically overloaded.

(*c*) The Railway has to issue time tables, fare tables, to keep accounts to issue tickets and receipts. No such obligations are imposed on motor transport.

(*d*) The Railway is compelled to limit the hours of its operating staff; no such limitation is applied to staff operating buses.

(*e*) It is suggested that licenses are being issued to bus drivers without proper tests as to their physical fitness, or ability to drive.

(*f*) Bus accidents do not seem to be considered of such importance as railway accidents. No records of bus accidents appear to be compiled. (Para. 31.)

Chapter IV.—Motor Transport in the Punjab, its taxation and the possible desirability of tighter control.

(16) Taxation of rural motor buses at present is light in the Province; but the present system of charging these vehicles at parking places is unsatisfactory. (Paras. 33 and 34.)

(17) There is difficulty at present in enforcing the motor transport traffic regulations, especially as regards overloading. (Para. 35.)

(18) Public motor vehicles are not at present restricted to locality and this arrangement has objections. (Para. 36.)

(18) There appears to be very general agreement that closer control of motor transport is necessary in the interests of the public generally and quite apart from the Railway interests. (Paras. 37 and 38.)

(19) While most people we consulted opposed monopolies, it was generally conceded that some form of limited monopoly might be better than the present system; we therefore suggest for consideration the amendment of the present regulations governing licensing so as to limit the number of vehicles plying for hire on a given route with the object of inducing more reputable operators to enter into the motor transport business. (Para. 39.)

(20) At present there is no rule compelling the operator of motor transport to insure against third party risk. We consider that compulsory insurance or, alternatively, a security deposit should be given consideration; the imposition of such would tend to bring reputable operators into the business. (Para. 40.)

(21) The introduction of Transport Companies or reputable persons owning a number of vehicles into the business would help to meet many of the objections of unfair competition now raised by the railway. (Para. 41.)

(22) We definitely consider that motor transport should not be permitted, at present, to operate over long distances and to stop this we recommend that a system of zoning should be considered. (Para. 42.)

(23) If the foregoing suggestions are adopted extra work would be thrown on the Registration Authorities; in this connection we would suggest that Traffic Advisory Boards be set up to the extent necessary in the Province. (Para. 43.)

Chapter V.—Branch Line Railway Projects.

(24) We suggest that instead of the completion of (*a*) Lyallpur Chananwala Railway, and (*b*) Quadian Beas Section of the Batala Beas Railway suitable roads be constructed in the area that would be served by these lines. (Para. 44.)

Chapter VI.—Programme of future road development.

(25) The programme, as we have presented it, is, particularly in the case of the development of arterial roads, dependent upon the adoption of some system of zoning of motor transport. (Para. 45.)

(26) We understand that considerable progress has been made in the improvement of existing metalled roads by surface treatment with tar and bitumen and that this treatment will make considerable progress during the next two years and go far to meet the problem of maintenance of existing roads for present traffic. We therefore make merely a small provision for widening and reconstructing in improved materials on existing arterial roads. (Para. 46.)

(27) We have considered the development of each arterial road which is at present incomplete and have suggested the abandonment for the present of the metalling of certain of these or certain sections of them

and also modification of the proposed alignment in certain instances. The programme thus modified amounts to the provision of an additional 452 miles of metalled road, 821 miles of improved earth road, and 70 miles of intermediate stage development, and also specific recommendations regarding the linking of the arterial road system with railway stations and towns and villages within five miles. Including the provision of a sum of Rs. 19 lakhs for certain bridges the programme is estimated to cost Rs. 162 lakhs for arterial roads. (Paras. 47-70 and Appendix 5.)

(28) In respect of roads of Classes II and III, we have made certain suggestions for new metalling district by district and have endeavoured as far as possible to arrive at the greatest needs of each district in the matter of metalled roads, bridging, intermediate stage development, and earth road improvement. As a general measure of all round improvement we propose that a further 10,000 miles of earth roads should be raised to the improved standard now attained on various roads in the province. We have also made certain proposals regarding the provision of feeder roads to railway stations. Our proposals in respect of roads of Classes II and III therefore involve the provision of additional 460 miles of metalled roads, 10,000 miles of improved unmetalled roads, and 750 miles of road to be raised to an intermediate stage of development at an estimated cost, including the provision of Rs. 43 lakhs for bridging, of Rs. 238·74 lakhs. (Paras. 71-96 and Appendix 6.)

(29) The total programme amounts to a sum of Rs. 4 crores and we have briefly referred to the propriety and advantage of executing this out of loan to the extent to which this appears to be appropriate. (Paras. 97 and 98 and Appendices 8 and 9.)

APPENDIX 1.

(*See* para. 5.)

Detailed Itinerary and Diary.

1. *Friday, 15th July 1932.*—We left Ambala by car at 5-15 a.m. and proceeded by the Grand Trunk Road to Ludhiana. On the way we conducted enquiries at various localities into the bus traffic on the route, and on our arrival at Ludhiana we were taken by Mr. Ramji Das, District Board Engineer, for about 20 miles over an improved earth road maintained by the District Board. We then had an interview with the Deputy Commissioner at Ludhiana, Mr. Connor, who had with him Lala Devi Das, Member of Ludhiana District Board, Mr. Gurcharan Das Mehta, Executive Engineer, Jullundur Division, and Mr. Ramji Das, District Board Engineer. We then proceeded by car from Ludhiana to Ferozepore, and at Jagraon on the way we stopped and collected information on the conditions of transport in the neighbourhood.

2. *Saturday, 16th July 1932.*—On this day at 9-30 a.m. we interviewed the Deputy Commissioner, Ferozepore, Mr. S. Partab, I.C.S., who had with him Pir Akbar Ali, M.L.C., Vice-President of the District Board, Ferozepore, and District Board Engineer. Mr. Gurcharan Das Mehta, Executive Engineer, Jullundur Division, was also present.

During the same morning we called on the Divisional Superintendent, North Western Railway, Ferozepore, and asked him his views on the general question of motor competition and its effect on his Division.

The party left Ferozepore for Lahore by car and reached Lahore at 5-15 p.m.

3. *Monday, 18th July 1932.*—Khan Bahadur Muzaffar Hussain when joining us at Ludhiana had handed to us a file of information which had been collected on the subject of road competition by the North Western Railway and this formed the basis of a preliminary discussion we had with the Agent of the North Western Railway on the morning of this date.

On the same evening the party left Lahore at 17-35 for Montgomery.

4. *Tuesday, 19th July 1932.*—We proceeded by car to inspect the roads in the Nili Bar, our route taking us to Arifwala, Pakpattan and back to Montgomery. The Divisional Superintendent, North Western Railway, Multan, Rai Bahadur P. L. Dhawan, had arrived at Montgomery to meet us and after a discussion with him we proceeded with him to interview Mr. Le Bailey, Deputy Commissioner, Montgomery District. The same night we left Montgomery for Lyallpur, accompanied by Rai Bahadur P. L. Dhawan.

5. *Wednesday, 20th July 1932.*—On arrival at Lyallpur we proceeded by the District Board road to Samundry and Gojra and visited the Mandi at the latter place. We then interviewed Mr. Keogh, Deputy Commissioner, Lyallpur District, who had with him many of the members of his District Board. Following this interview we proceeded to the Mandi at Lyallpur and interviewed the merchants there. In the afternoon we proceeded by car from Lyallpur to Lahore, and thence travelled by night to Gurdaspur.

6. *Thursday, 21st July 1932.*—After inspection of certain kutcha roads maintained by the District Board, Gurdaspur, we interviewed the Deputy Commissioner Khan Bahadur Banyad Hussain and certain members of the District Board. We then left for Amritsar by car and proceeded by rail to Lahore, *en route* for Sialkot.

7. *Friday, 22nd July 1932.*—After arriving at Sialkot we inspected with the District Engineer, Mr. Kurja, the kutcha roads maintained by the District Board

at Sialkot, and subsequently interviewed Mr. Anderson, I.C.S., Deputy Commissioner, Sialkot, who had with him a few prominent members of his District Board. We left Sialkot and proceeded to Rawalpindi by road *viâ* Wazirabad. We arrived at Rawalpindi at 7 p.m.

8. *Saturday, 23rd July 1932.*—We interviewed Mr. Bradford, I.C.S., Deputy Commissioner, Rawalpindi District. Mr. Bradford had with him Mr. Hill, Superintendent of Police of the Rawalpindi District, and a few members of his District Board. We then called on Colonel Woodhouse, M.C., R.E., Divisional Superintendent of the North Western Railway, Rawalpindi, and discussed with him the question of motor competition so far as it affected his Division.

In the afternoon we proceeded by road to Tret to inspect the Ghat Road to Murree. We left Pindi by train at 7-35 p.m. for Jhelum.

9. *Sunday, 24th July 1932.*—Mr. Kirkness, Mr. Stubbs and Khan Bahadur Muzaffar Hussain proceeded by car from Jhelum to Lahore.

10. *Monday, 25th July 1932.*—On this day the party proceeded by road to Amritsar and interviewed the Deputy Commissioner, Amritsar, Mr. Jenkins, I.C.S. Mr. Jenkins had with him certain members of his District Board and he had also invited to attend the discussion two persons acquainted with the conditions under which the transport of goods by motors is now being undertaken from Amritsar as a centre. We subsequently visited the parking places in the city where the motor transport goods services are organized.

We returned to Lahore and in the afternoon interviewed Mr. Askwith, I.C.S., Deputy Commissioner, Lahore.

11. *Tuesday, 26th July, Wednesday, 27th July, Thursday, 28th July, and Friday, 29th July 1932.*—During these days we stayed at Lahore compiling the information which we had so far collected ; we also interviewed the following :—

(*a*) Mr. Lockwood, Chief Transportation Superintendent, Mr. Chase, Chief Commercial Manager and other Officers of the Commercial Department of the North Western Railway.

(*b*) Mr. B. C. Bean, Divisional Superintendent, North Western Railway, Lahore.

(*c*) Messrs. Owen Roberts and Burbidge, Chairman and Member of the local branch of the Indian Road and Transport Development Association.

(*d*) Sirdar Makan Singh.

We returned to Simla on the night of Friday, 29th July.

APPENDIX 2.

(*See* para. 12.)

Particulars regarding communications in the area having a population density of 100 per square mile and over. That is excluding Simla, Kangra (80), Mianwali (76), Muzaffargarh (98) and Dera Ghazi Khan (90). (Figures in brackets refer to density of population.)

	Sq. miles.
Area	73,000
Population	21,219,154
Average density	290

Roads and Railways.

—	Length in mile.	Length per 100 sq. miles of area.	Area per mile of road or railway sq. miles.	Persons per mile of road or railway.
1. Railways	3,306	4·52	22·0	6,400
2. Metalled roads	3,689	5·05	19·8	5,800
3. Improved or motorable unmetalled roads (fair weather).	5,166	7·07	..	..
4. Total motorable roads	8,855	12·12	8·33	2,400
5. Other unmetalled roads	12,384	16·95	..	..
6. Total all roads	21,239	29·10	3·42	1,000

Area more than 10 miles from any railway line is 19,000 square miles or 26 per cent. of total.

APPENDIX 3.

(*See* para. 33.)

PUNJAB MOTOR VEHICLES TAXATION.

SCHEDULE.

Description of motor vehicles.	*Annual rate of tax.
1. Cycles (including motor-scooters and cycles with attachment for propelling the same by mechanical power), not exceeding 8 cwts. in weight unladen—	Rs.
(*a*) Bicycles not exceeding 200 lbs. in weight unladen . .	15
(*b*) Bicycles exceeding 200 lbs. in weight unladen . . .	30
(*c*) Bicycles if used for drawing a trailer or side-car, in addition	10
(*d*) Tricycles	40
2. Vehicles not exceeding 5 cwts. in weight unladen, adapted and used for invalids	5
3. Vehicles used solely in the course of trade and industry for the transport of goods (including tricycles) weighing more than 8 cwts. unladen—	
(*a*) Electrically propelled, but not exceeding 25 cwts. in weight unladen	35
(*b*) Vehicles other than such electrically propelled vehicles as aforesaid not exceeding 12 cwts. in weight unladen	25
(*c*) Vehicles exceeding 12 cwts. but not exceeding 1 ton in weight unladen	37½
(*d*) Vehicles exceeding one ton, but not exceeding 2 tons in weight unladen	75
(*e*) Vehicles exceeding 2 tons, but not exceeding 3 tons in weight unladen	200
(*f*) Vehicles exceeding 3 tons, but not exceeding 4 tons in weight unladen	300
(*g*) Vehicles exceeding 4 tons in weight unladen . . .	400
(*h*) Vehicles used for drawing a trailer, in addition for each trailer; provided that two or more motor vehicles shall not be chargeable under this clause with respect to the same trailer	50
†**4.** Vehicles plying for hire and ordinarily used for the transport of passengers within the limits of a Municipality or a Cantonment—	
(*a*) Tram cars	15
(*b*) Other vehicles seating not more than four persons .	50

*(NOTE.—The rates given in the above schedule have been revised under the Punjab Motor Vehicles Taxation (Amendment) Act, 1925.)

†In this paragraph the number of persons mentioned does not include the driver of the vehicle.

PUNJAB MOTOR VEHICLES TAXATION—*contd.*

SCHEDULE—*contd.*

Description of motor vehicles.	Annual rate of tax.
4. Vehicles plying for hire and ordinarily used for the transport of passengers within the limits of a Municipality or a Cantonment - *contd.*	Rs.
(*c*) Other vehicles seating more than four persons, but not more than six persons	75
(*d*) Other vehicles seating more than six persons, for every additional person that can thus be seated up to 32, in addition	6
(*e*) Other vehicles seating more than 32 persons . . .	700
4-A. Vehicles plying for hire and ordinarily used for the transport of passengers outside the limits of a Municipality or a Cantonment or from a point within the limits of a Municipality or Cantonment to a point situated outside such limits or within the limits of another Municipality or Cantonment—	
(*a*) Tram cars	15
(*b*) Otner vehicles seating not more than four persons .	30
(*c*) Other vehicles seating more than four persons, but not more than six persons	40
(*d*) Other vehicles seating more than six persons, but not more than twenty persons	50
(*e*) Other vehicles seating more than twenty persons, for every additional person that can thus be seated up to 32, in addition	6
(*f*) Other vehicles seating more than 32 persons . . .	700
5. Motor vehicles other than those liable to tax under the foregoing provisions of this schedule—	
(*a*) Seating not more than one person	40
(*b*) Seating not more than three persons	60
(*c*) Seating not more than four persons	80
(*d*) Seating more than four persons, for every additional person that can be seated	20

APPENDIX 4.

(*See* para. 46.)

(EXTRACT FROM ADMINISTRATION REPORT OF THE PUNJAB GOVERNMENT, PUBLIC WORKS DEPARTMENT, BUILDINGS AND ROADS BRANCH, FOR THE YEAR 1930-31.)

Length of and expenditure (by roads) on maintenance of roads in charge of the Public Works Department, Buildings and Roads Branch, for the year ended 31st March 1931.

Name of Road.	Length.			Expenditure.			Rate per mile.		Remarks.
	Metalled.	Un-metalled.	Total.	Metalled.	Un-metalled.	Total.	Metalled.	Un-metalled.	
1	2	3	4	5	6	7	8	9	10
Arterial Roads.	Miles.	Miles.	Miles.	Rs.	Rs.	Rs.	Rs.	Rs.	
1. Grand Trunk Road . .	555·51	4·98	560·49	11,21,712	874	11,22,586	2,019	176	The lengths are as on 31st March 1931.
2. Lahore-Sargodha-Mianwali	125·51	59·625	185·135	1,63,778	9,044	1,72,822	1,305	152	The lengths include links connecting the parent road within railway station.
3. Lahore-Lyallpur-Bhakkar.	84·16	139·10	223·26	1,53,046	23,503	1,76,549	1,818	169	
4. Lahore-Multan-Quetta .	192·52	144·62	337·14	2,15,249	32,147	2,47,396	1,118	222	
5. Lahore-Ferozepore-Ludhiana.	136·58	..	136·58	2,90,769	..	2,90,769	2,128	..	
6. Delhi-Multan . . .	285·54	122·20	407·74	3,97,467	24,518	4,21,985	1,392	201	
7. Delhi-Alwar . . .	67·07	..	67·07	85,689	..	85,689	1,278	..	
8. Hatti-Campbellpur-Dhokpathan.	31·87	38·60	70·47	32,733	6,620	39,353	1,027	172	
9. Rawalpindi (Tarnaul) Khushalgarh Kohat	32·50	34·88	67·38	28,821	4,260	33,081	887	122	

10. Fatehjang-Talagang-Mianwali.	42·60	18·00	60·60	43,089	2,546	45,635	1,011	142
11. Rawalpindi-Murree-Kashmir.	66·64	..	66·64	1,74,533	..	1,74,533	2,619	..
12. Jhelum (Sohawa) Talagang.	..	69·50	69·50	..	9,748	9,748	..	140
13. Wazirabad-Sialkot-Kashmir.	36·20	..	36·20	67,092	..	67,092	1,853	..
14. Amritsar-Pathankot-Kulu.	163·13	43·49	206·62	2,43,957	24,622	2,68,579	1,495	566
15. Pathankot (Chakki) Dalhousie.	39·54	..	39·54	47,583	..	47,583	1,203	..
16. *Blank*	..	..	..	..	..	..	..	..
17. Ferozepore-Fazilka . .	3·46	49·79	53·25	1,059	12,590	13,649	306	253
18. Jullundur-Hoshiarpur-Dharmsala.	41·41	68·09	109·50	62,616	30,576	93,192	1,512	449
19. Delhi-Muttra . . .	48·85	..	48·85	63,889	..	63,889	1,308	..
20. Ambala-Simla-Tibet .	90·14	186·45	276·59	1,33,665	63,847	1,97,512	1,483	342
21. Saharanpur-Kurukshetra .	31·47	..	31·47	31,917	..	31,917	1,014	..
22. Rohtak-Bhiwani . .	27·34	..	27·34	37,694	..	37,694	1,378	..
23. Sohna-Rewari . .	11·19	17·52	28·71	10,923	3,396	14,319	976	194
24. Muzaffargarh-Alipur .	27·00	24·62	51·62	23,406	4,443	27,849	867	180
25. Dera Ghazi Khan Mithankot.	10·36	69·00	79·36	4,093	11,981	16,074	395	174
26. Montgomery-Arafwala-Kabulah.	34·54	..	34·54	36,332	..	36,332	1,030	..
27. Montgomery-Pakpattan .	26·59	..	26·59	21,844	..	21,844	822	..
28. Lyallpur-Sargodha . .	13·33	39·60	52·93	6,447	8,108	14,555	484	205
29. Sambrial-Gujranwala-Pindi-Bhattian-Jhang.	59·15	51·93	111·08	1,26,367	8,370	1,34,737	2,136	161
30. *Blank*	..	..	..	..	..	..	..	..
31. Lahore-Moga . . .	50·40	22·56	72·96	33,563	3,237	36,800	666	143
32. Jaranwala-Okara . .	10·13	19·92	30·05	39,250	6,607	45,857	3,875	332
33. *Blank*	..	..	..	..	..	..	..	..
34. Amritsar-Sialkot . .	45·00	32·00	77·00	88,324	4,697	93,021	1,963	147
35. Gojra-Shorkot . .	11·14	34·72	45·86	19,204	4,670	23,874	1,724	135
Carried over .	..	..	..	..	..	..	..	..

APPENDIX 4.

(*See* para. 46.)

(EXTRACT FROM ADMINISTRATION REPORT OF THE PUNJAB GOVERNMENT, PUBLIC WORKS DEPARTMENT, BUILDINGS AND ROADS BRANCH, FOR THE YEAR 1930-31.)

Length of and expenditure (by roads) on maintenance of roads in charge of the Public Works Department, Buildings and Roads Branch, for the year ended 31st March 1931.

Name of Road.	Length.			Expenditure.			Rate per mile.		Remarks.
	Metalled.	Un-metalled.	Total.	Metalled.	Un-metalled.	Total.	Metalled.	Un-metalled.	
1	2	3	4	5	6	7	8	9	10
Arterial Roads.	Miles.	Miles.	Miles.	Rs.	Rs.	Rs.	Rs.	Rs.	
1. Grand Trunk Road	555·51	4·98	560·49	11,21,712	874	11,22,586	2,019	176	The lengths are as on 31st March 1931.
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3. Lahore-Lyallpur-Bhakkar	84·16	139·10	223·26	1,53,046	23,503	1,76,549	1,818	169	
4. Lahore-Multan-Quetta	192·52	144·62	337·14	2,15,249	32,147	2,47,396	1,118	222	
5. Lahore-Ferozepore-Ludhiana.	136·58	..	136·58	2,90,769	..	2,90,769	2,128	..	
6. Delhi-Multan	285·54	122·20	407·74	3,97,467	24,518	4,21,985	1,392	201	
7. Delhi-Alwar	67·07	..	67·07	85,689	..	85,689	1,278	..	
8. Hatti-Campbellpur-Dhokpathan.	31·87	38·60	70·47	32,733	6,620	39,353	1,027	172	
9. Rawalpindi (Tarnaul) Khushalgarh-Kohat.	32·50	34·88	67·38	28,821	4,260	33,081	887	122	
10. Fatehjang-Talagang-Mianwali.	42·60	18·00	60·60	43,089	2,546	45,635	1,011	142	
11. Rawalpindi-Murree-Kashmir.	66·64	..	66·64	1,74,533	..	1,74,533	2,619	..	
12. Jhelum (Sohawa) Talagang.	..	69·50	69·50	..	9,748	9,748	..	140	
13. Wazirabad-Sialkot-Kashmir.	36·20	..	36·20	67,092	..	67,092	1,853	..	
14. Amritsar-Pathankot-Kulu.	163·13	43·49	206·62	2,43,957	24,622	2,68,579	1,495	566	
15. Pathankot (Chakki) Dalhousie.	39·54	..	39·54	47,583	..	47,583	1,203	..	
16. *Blank*	..	..	..	..	..	..	..	..	
17. Ferozepore-Fazilka	3·46	49·79	53·25	1,059	12,590	13,649	306	253	
18. Jullundur-Hoshiarpur-Dharmsala.	41·41	68·09	109·50	62,616	30,576	93,192	1,512	449	
19. Delhi-Muttra	48·85	..	48·85	63,889	..	63,889	1,308	..	
20. Ambala-Simla-Tibet	90·14	186·45	276·59	1,33,665	63,847	1,97,512	1,483	342	
21. Saharanpur-Kurukshetra	31·47	..	31·47	31,917	..	31,917	1,014	..	
22. Rohtak-Bhiwani	27·34	..	27·34	37,694	..	37,694	1,378	..	
23. Sohna-Rewari	11·19	17·52	28·71	10,923	3,396	14,319	976	194	
24. Muzaffargarh-Alipur	27·00	24·62	51·62	23,406	4,443	27,849	867	180	
25. Dera Ghazi Khan Mithankot.	10·36	69·00	79·36	4,093	11,981	16,074	395	174	
26. Montgomery-Arafwala-Kabulah.	34·54	..	34·54	36,332	..	36,332	1,030	..	
27. Montgomery-Pakpattan	26·59	..	26·59	21,844	..	21,844	822	..	
28. Lyallpur-Sargodha	13·33	39·60	52·93	6,447	8,108	14,555	484	205	
29. Sambrial-Gujranwala-Pindi-Bhattian-Jhang.	59·15	51·93	111·08	1,26,367	8,370	1,34,737	2,136	161	
30. *Blank*	..	..	..	..	..	..	..	..	
31. Lahore-Moga	50·40	22·56	72·96	33,563	3,237	36,800	666	143	
32. Jaranwala-Okara	10·13	19·92	30·05	39,250	6,607	45,857	3,875	332	
33. *Blank*	..	..	..	..	..	..	..	..	
34. Amritsar-Sialkot	45·00	32·00	77·00	88,324	4,697	93,021	1,963	147	
35. Gojra-Shorkot	11·14	34·72	45·86	19,204	4,670	23,874	1,724	135	
Carried over	..	..	..	..	..	..	..	..	

Length of and Expenditure (by roads) on maintenance of roads in charge of the Public Works Department, Buildings and Roads Branch, for the year ended 31st March 1931—contd.

Name of Road.	Length.			Expenditure.			Rate per mile.		Remarks.
	Metalled.	Un-metalled.	Total.	Metalled.	Un-metalled.	Total.	Metalled.	Un-metalled.	
1	2	3	4	5	6	7	8	9	10
	Miles.	Miles.	Miles.	Rs.	Rs.	Rs.	Rs.	Rs.	
Brought forward .	..	..	..	..	..	..	..	..	
Arterial Roads—contd.									
36. Sonepat-Rohtak . .	33·524	..	33·524	64,395	..	64,395	1,921	..	
37. Karnal-Kaithal . .	38·45	..	38·45	1,21,178	..	1,21,178	3,152	..	
38. *Blank*	..	..	..	..	..	..	..	..	
39. Toba Tek Singh-Chichawatni-Burewala.	18·03	41·65	59·68	36,093	8,245	44,338	2,002	198	
40. *Blank*	..	..	..	..	..	..	..	..	
41. Kabirwala-Jhang . .	..	61·5	61·5	..	14,154	14,154	..	230	
42. Meerut-Sonepat . .	4·70	7·00	11·70	8,465	75,933*	84,398	181	10,848	* Includes expenditure for improving and metalling
Total Arterial Roads .	2,495·574	1,401·345	3,896·919	40,36,242	3,98,736	44,34,978	1,622	285	

APPENDIX 5.

(*See* paras. 46 and 97.)

Programme of development of arterial roads and additional liability for maintenance.

Arterial Road No.	Mileage.			Costs Rs. Lakhs.					Extra Maintenance.		Remarks.
	Metalled.	Improved earth.	Next Stage Development.	Metalling.	Improved earth.	Next Stage.	Bridges.	Total.	Rate metalled.	Amount Rupees.	
2	21	..	Intermediate development between earth and metalled, *e.g.*, surface treated with at say 5 per cent. of existing mileage of unmetalled in class I = 5 per cent. of 1,400 or 70 miles.	0·21	..	70 miles at 10,000 = 7,00,000.	..	0·21	800	16,800	
3	10	6		2·00	0·06		..	2·06	1,000	10,600	
4	25	..		4·50	..		..	4·50	1,200	30,000	
3-a Link	12	..		2·40	..		..	2·40	1,200	14,400	
6	100	..		20·00	..		4·00	24·00	1,200	1,20,000	
8	..	25		..	0·50		2·00	2·50	..	2,500	
10	..	60		..	1·20		1·00	2·20	..	6,000	
12	..	25		..	1·25		1·00	2·25	..	2,500	
18	..	..		..	5·00		..	5·00	..	..	Already maintained.
23	20	..		2·40	..		..	2·40	1,000	20,000	
24	..	10		..	0·10		..	0·10	..	1,000	
25	..	60		..	1·20		..	1·20	..	6,000	
28	50	..		10·00	..		..	10·00	1,500	75,000	
29	..	35		..	0·26		..	0·26	..	3,500	
31	32	..		5·00	0·08		4·00	9·08	1,200	38,000	
32	62	..		12·40	..		2·00	14·40	1,500	93,000	
34	40	..		8 00	..		3·00	11·00	1,200	48,000	
39	80	..		16·00	..		2·00	18·00	1,500	1,20,000	
Railway Station approaches.	..	100		..	1·00		..	1·00	100	10,000	
Feeders to towns and villages.	..	500		..	2·50		..	2·50	100	50,000	
Total	452	821	..	82·91	13·15	7·00	19·00	122·06	..	6,67,300	

Programme of development of arterial roads and additional liability for maintenance—contd.

Arterial Road No.	Mileage.			Costs Rs. Lakhs.					Extra Maintenance.		Remarks.
	Metalled.	Improved earth.	Next Stage Development.	Metalling.	Improved earth.	Next Stage.	Bridges.	Total.	Rate metalled.	Amount Rupees.	
Intermediate Stage Development.	..	..	70	..	..	..	..	..	600	42,000	
Widening existing arteries.	500	..	..	35·00	..	..	..	35·00	400	2,00,000	
Strengthening existing arteries with improved surfaces.	50	..	..	5·00	..	..	..	5·00	..	..	
Total .	..	..	..	122·91	13·15	7·00	19·00	162·06	..	9,09,300	

APPENDIX 6.

(*See* para. 97.)

CLASS II AND CLASS III ROAD PROGRAMME.

Metalling and improvement and resulting additional liability for maintenance.

District.	Milage.			Cost in lakhs.					Extra cost of maintenance.	
	To be metalled.	To be improved as unmetalled.	To be raised to intermediate stage of development.	Metalling.	Improving.	Intermediate stage of development.	Bridges.	Total.	Rate.	Amount.
									Rs.	Rs.
Hissar	37	..	Raising of 5 per cent. of 5,000 roads already improved 250 to next stage of development. Raising of 5 per cent. of 10,000 roads already improved 750 to next stage of development 500/750.	4·40	..	750 miles. Stage development at Rs. 10,000=75,00,000.	..	4·40	700	26,000
Rohtak	14	..		1·68	..		..	1·68	700	10,000
Gurgaon	44	..		6·18	..		..	6·18	700	31,000
Karnal	14	..		2·10	..		..	2·10	900	12,600
Ambala	21	..		2·75	..		10·00	12·75	900	19,000
Kangra	..	..		..	0·15		10·00	10·15	..	..
Hoshiarpur	..	..		..	..		15·00	15·00	..	..
Ferozepur	36	..		5·40	..		..	5·40	800	28,800
Ludhiana	12	20		0·96	0·30		..	1·26	800	9,600
Amritsar	43	..		6·02	..		..	6·02	900	38,700
Gurdaspur	18	..		3·60	..		1·00	4·60	800	14,400
Lahore	59	..		11·10	..		..	11·10	900	54,000
Sialkot	..	..		..	..		3·00	3·00	..	..
Gujranwala	23	..		3·45	..		..	3·45	..	..
Sheikhupura	40	..		8·00	..		..	8·00	900	36,000
Gujrat	25	..		3·75	..		2·00	5·75	900	22,500
Jhelum	14	10		1·40	0·50		..	1·90	900	12,600
Rawalpindi	20	..		1·00	..		1·50	2·50	700	14,000
Attock	..	..		..	..		·50	·50	..	..
Montgomery	20	..		4·00	..		..	4·00	1,000	20,000
Lyallpur	20	..		4·00	..		..	4·00	1,000	20,000
Total	460	30	..	69·79	0·95	..	43·00	113·74	..	3,69,200

Metalling and improvement and resulting additional liability for maintenance—contd.

District.	Milage.			Cost in lakhs.					Extra cost of maintenance.	
	To be metalled.	To be improved as unmetalled.	To be raised to intermediate stage of development.	Metalling.	Improving.	Intermediate stage of development.	Bridges.	Total.	Rate.	Amount.
									Rs.	Rs.
Intermediate stage . . .	..	..	750	..	..	75·00	..	75·00	600	4,50,000
Improvements of Classes II and III unmetalled roads including feeders to railway stations and arteries.	..	10,000	..	..	50·00	..	..	50·00	75	7,50,000
Total .	..	..	..	69·79	50·95	75·00	63.00	238·74	..	15,69,200

APPENDIX 7.

(*See* para. 96.)

List of feeder roads which the N. W. Railway suggests should be constructed or improved.

Name of railway.	Name of Station.	Name of Road.	Milage.
1. Shershah-Kundian .	Leiah . .	Leiah-Alliani Ferry .	10
2. Lahore-Karachi .	Lodhran . .	Lodhran-Jalalpur .	27
3. Wazirabad-Lyallpur	Hafizabad . .	Hafizabad-Wanike .	18
4. Ditto . .	Ditto . .	Mahmudpur-Jalal p u r Nau.	5
5. Malakwal-Shorkot .	Sillanwala . .	Faruka-Bera . .	10
6. Ditto . .	Shahjiwana .	Shahjiwana-Kot Ise Khel.	13
7. Ditto . .	Sillanwali . .	Sillanwali-Barana .	5
8. Ditto . .	Shahjiwana .	Shahjiwana-Chatta .	8
9. Ditto . .	Ditto . .	Shahjiwana-R a t t a Mata.	8
10. Amritsar-Pathankot	Pathankot . .	Pathankot-Andaura .	12
11. Lahore-Delhi .	Phagwara . .	Phagwara-Nadalon .	4½
12. Chinot-Hundiwali .	Lalian . .	Lalian-Wala . .	6
13. Narowal-C h a k Amru.	Shakargarh .	Shakargarh-Bambia .	12½
14. Ditto . .	Chak-Amru .	Chak Amru-Ghamrola or Shakargarh-Ghamrola.	10½
15. Narowal-Sialkot .	Killa Suba Singh .	Kila Sobha Singh-Zaffarwal.	12
		TOTAL .	161½

APPENDIX 8.

(*See* para. 98.)

Road Development from Loan Funds.

Any particular programme or scheme for road development out of loan funds will have to be examined on its merits, but there are certain principles which appear to apply to most cases, and which may be suggested.

Firstly, while for the justification of a loan programme and to prevent this being a burden on general revenues the loan may be served as to interest and repayment of principal from certain particular sources of revenue earmarked for the purpose—*e.g.*, in this case, taxes on road transport—the security must be the general revenues of the borrowing authority and not any particular class of revenue. The suggestion that road loans may be raised or bonds issued *on the security* of the revenues from the taxation of motor transport appears to be based on a misconception of the position. Secondly, before any development is financed from loans the fact that there will be ample provision for future maintenance of the works constructed should be established beyond reasonable doubt. Thirdly, the period over which the repayment of the loan is to be spread should be substantially less than the reasonable expectation of life of the work, *i.e.*, the work should be fully paid for before it is worn out or obsolete. Fourthly, however the loan is to be served, it should not be of so long a period as to deprive the future Administrations of initiative, that is to say, that if, for example, in a programme of road development from loan funds the loan is to be served by the proceeds of certain taxes on road transport there would be objections to earmarking the whole of the present revenues from those taxes for a period of 30 years in order to carry through a ten-year construction programme.

In a programme of road development from loans a practical difficulty arises in connection with the third principle of determining what expectation of life may reasonably be assumed for the work carried out. The question is comparatively simple of course in the case of *quasi*-permanent structures like bridges, culverts, and causeways, because in such cases a life of, say, 75 years may be reasonably assumed, while it will not normally be suggested that the period of the loan should exceed 30 years. In the case of roads, however, there is a difficulty in the matter of the wearing surface or crust. On the one hand it may be argued that since in the case of improved unmetalled roads the life of the surface is entirely dependent on regular year to year maintenance and is therefore *nil*; and since in the case of ordinary water bound macadam the surface may require complete renewal after 5 years; and since in the case of surface treated water bound macadam the surface paint coat may have to be renewed every second or third year; the life cannot be taken as more than *zero*, 5 years, or 2 years respectively in the case of the actual surface of an earth, water bound or treated water bound macadam road respectively. On the other hand it is possibly arguable that, if the provision for future maintenance, including periodic renewals, is placed upon so sound a basis as to leave no reasonable doubt that funds will be provided and that maintenance and renewal will be carried out from time to time as required, then it may be assumed that the work carried out on loan will substantially be maintained in perpetuity and that therefore the whole outlay may reasonably be debited to loan funds. We cannot feel that this latter argument is really sound, but we think it reasonable to suggest that there are parts of any road structure which will upon examination be found to be appropriately debitable to loan and as an approximation we suggest that, in the case of ordinary metalling with or without surface treatment, the proportion debitable to loan might be found to be 75 per cent.; in the case of the intermediate stage development, which provides the foundation for future improvements, the proportion might be 50 per cent.; and in the case of improved earth roads, the

improvement of which comprises a certain amount of heavy more or less permanent earth work and certain minor culverts and causeways, the proportion might be 25 per cent.; but in the latter case we doubt whether any practical advantage would be secured by debiting 25 per cent. of the cost to loan funds. We therefore assume for the purposes of our rough calculations that 75 per cent. of the cost of metalling and 50 per cent. of the cost of intermediate stage development might be charged to loan for a period of 15 years if it were found that any great practical benefit would result from short term loans of this order.

The following table gives approximately the percentage rate of equated payments which would have to be paid for loans of various periods at various rates of interest:—

	Equated payments at rate of interest.		
	5 per cent.	5½ per cent.	6 per cent.
30-year loan	6·505	6·881	7·265
20 „ „	8·024	8·368	8·718
15 „ „	9·634	9·963	10·296

APPENDIX No. 9.

(*See* para. 98.)

Comparison of effect of carrying out suggested Punjab programme of road development (a) wholly out of revenue and (b) partly out of loan; bridges being financed by a 30-year loan and 75 per cent. of cost of metalling and 50 per cent. of cost of intermediate stage being provided by a 15-year loan. Interest on borrowings assumed at 5 per cent. "Service of loan" being equated payments. Money borrowed in the year required. Maintenance liability accrues the year after construction. Programme assumed to be spread equally over 10 years. All figures in Rs. lakhs.

Year.	ALL FROM REVENUE.			PART FROM CAPITAL.						Total Revenue Outlay.
	Works Outlay.	Maintenance.	TOTAL.	Total Capital Outlay.	Revenue Outlay on works.	Service of 15-year loan.	Service of 30-year loan.	Total Revenue Outlay on works and service of loan.	Maintenance.	
1	2	3	4	5	6	7	8	9	10	11
1	40·0	..	40·0	24·75	15·25	..	..	15·25	..	15·25
2	40·0	2·5	42·5	24·75	15·25	1·79	0·40	17·44	2·50	19 94
3	40·0	5·0	45·0	24·75	15·25	3·58	0·80	19·63	5·00	24·63
4	40·0	7·5	47·5	24·75	15·25	5·37	1·20	21·82	7·50	29·32
5	40·0	10·0	50·0	24·75	15·25	7·16	1·60	24·01	10·00	34·01
6	40·0	12·5	52·5	24·75	15·25	8·95	2·00	26·20	12·50	38·70
7	40·0	15·0	55·0	24·75	15·25	10·74	2·40	28·39	15·00	43·39
8	40·0	17·5	57·5	24·75	15·25	12·53	2·80	30·58	17·50	48·08
9	40·0	20·0	60·0	24·75	15·25	14·32	3·20	32·77	20·00	52·77
10	40 0	22·5	62·5	24·75	15·25	16·11	3·60	34·90	22·50	57·46
11	..	25·0	25·0	..	..	17·90	4·00	21·90	25·00	46·90
12	..	25·0	25·0	..	..	17·90	4·00	21·90	25·00	46·90
13	..	25·0	25·0	..	..	17·90	4·00	21·90	25·00	46·90
14	..	25·0	25·0	..	..	17·90	4·00	21·90	25·00	46·90
15	..	25·0	25·0	..	..	17·90	4·00	21·90	25·00	46·90
16	..	25·0	25·0	..	..	17·90	4·00	21·90	25·00	46·90
17	..	25·0	25·0	..	..	16·11	4·00	20·11	25·00	45·11
18	..	25·0	25·0	..	..	14·32	4·00	18·32	25·00	43·32
19	..	25·0	25·0	..	..	12·53	4·00	16·53	25·00	41·53
20	..	25·0	25·0	..	..	10·74	4·00	14·74	25·00	49·74
21	..	25·0	25·0	..	..	8·95	4·00	12·95	25·00	37·75
22	..	25·0	25·0	..	..	7·16	4·00	11·16	25·00	36·16
23	..	25·0	25·0	..	..	5·37	4·00	9·37	25·00	34·37
24	..	25·0	25·0	..	..	3·58	4·00	7·58	25·00	32·58
25	..	25·0	25·0	..	..	1·79	4·00	5·79	25·00	30·79
26	..	25·0	25·0	..	..	..	4·00	4·00	25·00	29·00
TOTAL .	409·0	512·5	912·5	247·50	152·50	268·50	82·00	503·00	512·50	1,015·50

6. BIHAR AND ORISSA.

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BIHAR AND ORISSA.

CHAPTER I.—BRIEF ITINERARY.

1. *Officers deputed to assist us in Bihar and Orissa.*—During our stay in Bihar and Orissa we had the privilege of being assisted by the following officers of the Public Works Department :—

Mr. H. A. Gubbay, Chief Engineer and Secretary, Public Works Department, Buildings and Roads.

,, N. G. Dunbar, Superintending Engineer, Public Works Department, Chota Nagpur Circle.

,, J. G. Powell, Superintending Engineer, Public Works Department, Patna Circle.

The East Indian Railway arranged for Mr. J. C. Rose, Deputy Chief Commercial Manager, Rates and Development, to accompany us while we visited those parts of the province served by the East Indian Railway ; and the Bengal Nagpur Railway sent Mr. Mazumdar, Publicity Officer, to meet us at Ranchi to represent the interests of that Railway.

2. *Places visited and persons interviewed.*—(*a*) *Government of Bihar and Orissa.*—During our tour of Bihar and Orissa we travelled 528 miles by rail and 132 miles by road. We visited Ranchi and discussed our terms of reference with :—

Sir Ganesh Datta Singh, Hon. Minister for Local Self-Government.

Mr. H. A. Gubbay, Chief Engineer and Secretary, Public Works Department, Buildings and Roads.

While we were at Ranchi His Excellency the Governor gave us an interview and discussed with us the objects of our enquiry.

(*b*) *District Officers.*—At Dinapore Mr. J. A. Bell, Divisional Superintendent, East Indian Railway, Dinapore, arranged for a meeting to be held in his office. At the meeting the following were present :—

Mr. E. R. Cousins, I.C.S., Collector of Patna.

Khan Bahadur S. Haider, O.B.E., Collector of Gaya.

Babu Rameshwar Prasad Singh, M.L.C., Chairman, District Board, Gaya.

Mr. Rajan Dharisinha, Chairman, District Board, Patna.

Mr. J. G. Powell, Superintending Engineer, Patna.

Mr. J. C. Rose, Dy. Chief Commercial Manager, E. I. Railway.

At Hazaribagh we met Mr. Russell, I.C.S., Dy. Commissioner and Chairman of the Hazaribagh District Board; Mr. Dunbar, Superintending Engineer, Chota Nagpur Circle, and the Vice-Chairman of the District Board were also present at this meeting.

At Ranchi a meeting was held at the office of Mr. Toplis, I.C.S., Commissioner, Chota Nagpur. Mr. Mukerji, I.C.S., Dy. Commissioner, Ranchi District, attended the meeting and Mr. Rose of the East Indian Railway and Mr. Mazumdar of the Bengal Nagpur Railway were also present.

On our way to Madras we stopped at Cuttack, and called on Mr. C. L. Philip, I.C.S., the Commissioner, who arranged for us to meet:—

Rai Bahadur Lakshmidar Maharati, M.L.C.

Mr. D. P. Sharma, I.C.S., Collector of Cuttack, and

Rai Bahadur B. M. Das, Executive Engineer, Cuttack Division.

3. We take this opportunity of thanking the gentlemen mentioned above for the assistance they gave us in compiling the facts and figures embodied in this Report.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

4. *Communications.*—The area of Bihar and Orissa excluding Feudatory States is 83,161 square miles, and the population according to the 1931 census is 37,677,576, or an average density of 453 persons per sq. mile. But the average figure is considerably reduced by the relatively sparse population in Chota Nagpur and parts of Orissa. The density in Bihar is very high and is, for example, about 850 persons per square mile in the Tirhoot division, as a whole, and about 970 per square mile in the Muzaffarpur district. There are some 1,860 miles of broad gauge, 1,190 miles of metre gauge and 260 miles of narrow gauge railways or a total of 3,310 miles; the railways principally serving the province being the East Indian, Bengal and North-Western, and Bengal Nagpur. There are 3,961 miles of metalled roads, of which about half are provincial and half local, and 28,811 miles of unmetalled roads practically all of which are in district board charge. A considerable proportion of the unmetalled roads are gravelled and these and many of the earth roads can be traversed by motor vehicles in dry weather, but during the monsoon practically only the metalled roads are passable.

5. *Improved unmetalled roads.*—With the exception of gravelling certain roads where gravel is available there has been no large scale improvement of unmetalled roads in recent years. Generally the position appears to be that, while the possibility of considerable improvement is conceded, district boards are unable to provide the regular yearly funds necessary for any sustained improvement. Conditions are somewhat different in Orissa, in that the capital outlay necessary for raising and bridging would be considerable but given funds the local resources in gravel and laterite would render possible a marked improvement of surfaces at reasonable cost. Sand-clay mixtures are also advocated here.

6. *Classification of roads.*—As already stated extra municipal roads are in charge either of the P. W. D. (provincial roads) or of district boards. Recent development of, and improvement to, roads has been largely confined to provincial roads, certain district board roads having been provincialised as a preliminary to improvement.

7. *Expenditure on roads.*—The expenditure on roads of both classes and different types for a period of years ending with the year 1926-27 was given at Statement F at page 99 of the report of the Indian Road Development Committee. The expenditure in subsequent years has been as follows:—

	1928-29. Rs. Lakhs.	1929-30. Rs. Lakhs.
Original works	14·90	18·90
Repairs and maintenance	34·00	32·80
	48·90	51 70

Particulars are not readily available as to the expenditure, under both heads, by district boards in those years, but in 1926-27 14 per cent. of the outlay on original works, 23½ per cent. of that on repairs and maintenance and 20½ per cent. of the total was from district board funds on district board roads. About half the milage of metalled roads and practically all the unmetalled roads were in district board charge.

8. *Communications in relation to the area and population served.*—There is no district with a population density of less than 100 per square mile, but the great disparity between Bihar and Chota Nagpur, for instance, must necessarily impair the value of statistics of road and railway milage in relation to population and area, if compiled for the province as a whole. The time at our disposal does not permit us to work out these figures for the several parts of the province separately and we can only put forward those calculated for the province as a whole. In Appendix I therefore will be found certain figures for the whole area. It will be seen that the average density of population is over 450 per square mile; that the area served by one mile of railway is 25 square miles, by one mile of metalled road 21 square miles, and by all kinds of roads 2·54 square miles; and that of the whole area of 83,161 square miles, 32,629 square miles, or 39 per cent., are more than 10 miles from any railway. It must be added that, of the total length of metalled roads of 4,033 miles, 1,134 miles or about 28 per cent. are parallel with a railway and within 10 miles of it, while about 34 per cent. of the railway milage is paralleled by metalled roads.

9. *Conditions vary widely.*—Some qualification of the foregoing is desirable. The Orissa Feudatory States have, of course, been excluded. For the rest the mesh of the railway system is extremely fine North of the Ganges, there being some 1,210 miles of railway in an area of 12,500 square miles or only a fraction over 10 square miles of area for each mile of railway; in the rest of Bihar and Chota Nagpur there are large areas distant from any railway and in Orissa the area within ten miles of a railway is but a small fraction of the whole.

10. *Condition of metalled roads.*—The condition of provincial metalled roads is generally good. The cost for maintenance and renewal varies from Rs. 475 per mile per year in the case of the Orissa trunk road to about Rs. 1,000 in the more expensive sections of the Ranchi Road. A certain amount of surface tarring has been done where the maintenance cost is high and the cost works out ultimately to approximately the previous maintenance figure. Thus it cannot at present be stated whether any saving can be effected by such treatment and where water bound macadam can be maintained and renewed at, say, Rs. 750 per mile per year, surface treatment though an undoubted advantage can with difficulty compete on economic grounds. The condition of district board roads reflects the financial circumstances of these bodies and as at present situated they could not maintain any substantial additional milage.

11. *Bridges.*—There is great need for more bridges. The Ganges of course is a matter for country boats or steam ferries, while in the Orissa delta, apart from the unbridgeable Mahanadi, the cost of adequate bridging would be immense. There are however other insistent needs for bridges particularly in Orissa which are not wholly beyond the bounds of practical consideration.

12. *Need for more Feeder Roads.*—Recent developments in the improvement of roads have largely been upon provincial trunk or inter-district roads, in some cases "provincialised" *ad hoc;* but from the visits we have been able to pay to certain districts it is clear that there is also a strong demand for local feeder roads and bridges. So long, however, as the existing classification of roads prevails, such local needs are liable to be relegated to piecemeal consideration in the light of inadequate local resources. A general review of the more urgent of these requirements on a comprehensive plan would at least bring them into focus with provincial plans.

13. *Short link roads.*—In our printed questionnaire we asked about the number of villages of 1,000 population and over not on any public road and the probable cost of connecting these. As elsewhere the number is evidently large while the disability resulting from the absence of a road may not, in paddy country, be as great as might be imagined. A survey of the more urgent needs on a comprehensive and consistent plan would have to take this matter into account as well as the need for short links connecting railway stations with the local road system, of which we understand there are a considerable number required.

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS.

14. *Railways serving the Province.*—The Province of Bihar and Orissa is served by the lines of four railway administrations, the East Indian, the Bengal Nagpur, the Bengal and North-Western, and the Eastern Bengal.

The East Indian Railway serves the coal-fields, and its Grand Chord, Main, and Loop Lines run through the area between Ranchi and the River Ganges. Branch lines connect Patna with Gaya, and Gaya and Kiul; while further to the South there is the recently opened section of the Central India Coal-fields Railway from Gomoh to Daltonganj. To the South of Ranchi the Calcutta-Nagpur and the Calcutta-Waltair trunk lines of the Bengal Nagpur Railway intersect the province. The Bengal Nagpur Railway also serves the coal-fields by various branch lines; and another branch, on the 2′ 6″ gauge, runs from Purulia and Muri to Ranchi, and Lohardaga. The greater portion of the province North of the Ganges is served by the Tirhoot State Railway which is worked for the Secretary of State by the Bengal and North-Western Railway. To the extreme North-East, in the Purnea District, branch lines of the Eastern Bengal Railway, and the Darjeeling-Himalayan (extension) Railway penetrate the Province: the latter line is of 2′ 0″ gauge.

In the area served by the East Indian Railway there are 3 light feeder railways of 2′ 6″ gauge, the Baktiarpur-Bihar, the Fatwa-Islampur, and the Arrah-Sasaram Railways. These are all worked by Messrs. Martin & Company, Calcutta. The first is guaranteed by the District Board, Patna; and the Arrah-Sasaram by the District Board, Shahabad. The Fatwa-Islampur line is guaranteed by the Secretary of State.

15. *Roads running parallel with Railways.*—We have already pointed out that 1,134 miles of metalled roads or 28 per cent. are parallel with, and run within 10 miles of, the railways serving the province; and of a total railway milage of 3,310, 34 per cent. is parallel with metalled roads. By railway administrations, the milage of parallel metalled roads is as follows:—

	Milage of metalled roads parallel.
East Indian	269
Bengal Nagpur	482
Bengal and North-Western	214
Eastern Bengal	18
Darjeeling-Himalayan (extension)	40
Baktiarpur-Bihar Light Railway	19
Fatwa-Islampur Light Railway	25
Arrah-Sasaram Light Railway	61
	1,134

There is, thus, considerable scope for motor competition with railways in the province, but, so far as we have been able to ascertain, this has not yet assumed important proportions. Restriction on motor services competitive with railways is exercised to some extent; for instance, buses are not allowed to compete on the roads parallel with the Arrah-Sasaram and Baktiarpur-Bihar Light Railways, doubtless because the District Boards of Shahabad and Patna are respectively interested in the prosperity of these two lines. The Superintending Engineer, Chota Nagpur Division, also informed us that a through motor service is not permitted between Ranchi and Purulia, 50 miles, but local services are permitted between Ranchi and Thulin, 33 miles, and Thulin and Purulia, 17 miles. We would particularly draw attention to this, as it would appear to be an example of the limitation of the range of motor vehicles, to which the expression "zoning" is now usually applied.

16. *Competitive Bus Services.—A. East Indian Railway.*—The East Indian Railway Administration reports loss of passenger traffic in the province, due to the following competitive and short-circuiting bus services :—

I.—*Competitive services.*

	Miles.		No. of buses.
	Rail.	Road.	
1. Nawadah-Gaya	37	36	3
2. Fatwa-Patna	7	8	32
3. Patna City-Dinapore	12	13	76
4. Arrah-Behea	13	15	3
5. Arrah-Koilwar	9	10	1
6. Dehri-on-Sone-Karamnasa including Bhabua Road and Sasaram.	54	52	12
7. Gaya-Sone East Bank, *en route* Daudnagar *vid* Aurangabad.	50	59	5

Of these Nos. 2 to 5 are local in character, 2 and 3 being virtually urban services. Nos. 6 and 7 are long range services.

II.—*Short-circuiting services.*

	Miles.		No. of buses.
	Rail.	Road.	
1. Jamoocee-Sheikhupura	34	28	3
2. Jamoocee-Warisaliganj	50	45	1
3. Nabinagar Road-Aurangabad	..	26	2

17. *Losses due to bus competition, East Indian Railway.*—There is, obviously, great difficulty in arriving at any accurate estimate of the

losses suffered by the East Indian Railway, owing to these services, but the Railway Administration has provided us with figures which enable a calculation to be made, based on the number of buses running, the average seating capacity of each, the average daily trip, and a fare of 3 pies per passenger mile. There are about 150 buses running services either directly competitive with the E. I. Railway, or short-circuiting it on routes where the railway considers it has a reasonable chance of catering for the traffic. There is, we gather, no unemployment among the buses, the reason being that buses are licensed according to traffic needs ; on the other hand, we were informed that as many as 30 per cent. of the buses may be off the road daily owing to repairs, repainting, etc. If, then, it may be assumed that about 105 are on the road daily, that their average seating capacity is 23·3 and that their average daily trip 26·8, the calculation is :—

$$\frac{105 \times 26{\cdot}8 \times 23{\cdot}3 \times 3 \times 365}{12 \times 16} = \text{Rs. } 4,02,000.$$

This figure is less than that given us by the East Indian Railway which amounts to Rs. 5,66,000 and was based on the assumption that all the competitive buses were on the road daily. This assumption, we think, is not quite warranted, and hence we put forward the estimate above, but we would once again emphasize that all such calculations must be accepted with reserve.

18. *Methods adopted by the E. I. Railway to meet competition.*—In Bihar and Orissa the E. I. Railway experience the most severe competition in the neighbourhood of Patna and Dinapore, with what are virtually urban bus services, and the Divisional Superintendent, Dinapore, told us that there was under consideration an interesting proposal for meeting this. The Railway has had on hand since the construction of the Central India Coal-fields Railway a number of Sentinel road wagons and it has been suggested that these be fitted with flanged wheels suitable for running on rails and be provided with seats, like omnibuses. In the present time table there are considerable gaps in the day-light train services between Patna and Arrah and the Divisional Superintendent told us that if the Sentinel wagons could successfully be converted, it was his intention to run them as many times as possible during these intervals so as to give the inhabitants of Patna, Dinapore and Arrah a reasonably frequent passenger service during the hours when there were no ordinary trains.

It is quite likely that other Railway Administrations have similar vehicles on hand and should the E. I. Railway experiment prove a success it might be considered elsewhere.

19. *Bengal Nagpur Railway.*—The Bengal Nagpur Railway reports that motor bus competition first began to make itself felt on the railway in the year 1928-29. Throughout the railway there are now about 78 sections of line which are affected by motor buses, and of these 19 are in the province of Bihar and Orissa. This figure includes services which

short-circuit the railway. We give below a list of the services divided into (I) Competitive, and (II) Short-circuiting. In the case of some of the latter we consider that the railway cannot reasonably hope to compete. It will be noted that the Bengal Nagpur Railway have actually computed the passenger capacity of these bus routes by the total number of seats on the buses running the service and not by the number of buses.

I.—*Competitive.*

	Miles by rail.	Seating capacity of buses on route.
Purulia-Adra	25	31
„ Barahabhum	20	19
„ Bankura	58	25
„ Rukni	34	57
„ Chas Road	14	58
„ Jalda	30	19
„ Thulin	35	25
Ranchi-Muri	36	46
„ Lohardaga	43	70
Baripada-Betnoti	18	46
Tatanagar-Chaibassa	39	36
Chaibassa-Kendposi	22	18
Rourkela-Panposh	4	11

II.—*Short-circuiting.*

Baripada-Amarda Road	43	46
Tatanagar-Purulia	56	18
Chakardharpur-Chaibassa	39	36
Chaibassa-Ranchi	113	42
Purulia-Gomoh	70	19
Kendposi-Jaspur Road	281	108

We do not consider that the railway can reasonably hope to compete for the traffic in the last two cases.

20. *Estimated losses due to bus competition: B. N. Railway.*—The Bengal Nagpur Railway have calculated their losses on (*a*) the *seating* accommodation on the bus routes given above, (*b*) an assumed number of trips run by the buses daily, (*c*) 3½ pies per passenger mile—the III class fare in force on the railway, and (*d*) on the assumption that the buses run 300 days in the year.

As regards item (*b*), the railway have assumed the following trips per day :—

Up to 10 miles	6 daily journeys, *i.e.*, 3 outward and 3 return.
From 10 to 20 miles	4 daily journeys, *i.e.*, 2 outward and 2 return.
Over 20 miles	1 round trip.

The losses calculated by this method amount to Rs. 2,86,304, but this figure, dependent as it is on assumptions such as the above, is obviously very approximate, and we record it only because in the time

at our disposal it has not been possible to arrive at a result based on more certain factors. We think, however, that judging by the impressions we have gathered elsewhere and the experience of other railways, the estimate may not be very wide of the mark.

21. *Eastern Bengal Railway and Bengal and North-Western Railway.*—The Eastern Bengal Railway only reports the following competitive bus services in the province :—

	Miles.		No. of buses.	Seats.	Daily trips each way.	Fares.	
	By rail.	By road.				By rail.	By road.
Purnea-Kishanganj . .	77	42	3	12	1	1 6 6	1 6 0
,, Karagola . .	31	21	0	16	1	0 8 0	0 10 0
,, Katihar . .	17	21	1	12	1	0 5 0	0 8 0
,, Kasba . .	5	6	1	12	2	0 1 6	0 2 6

The Railway Administration has not furnished us with any estimate of losses due to these services, but they cannot be appreciable.

The B. & N. W. Railway only reports two cases of bus services affecting the Railway in the province. These are between Bettiah and Bagaha, and Muzaffarpur and Sitagari. The latter is a short-circuiting service with which it is admitted the railway cannot hope to compete.

22. *Total estimated losses.*—From paragraphs 17 and 19 it will be seen that the total estimated losses incurred by railways owing to motor competition in the province amount approximately to Rs. 7,00,000 yearly.

23. *Goods traffic by motor lorry.*—As we point out in Chapter IV, there are over two hundred goods lorries registered in the province, but these are mostly owned privately, either by merchants for carrying piece-goods from Lohardaga and Chaibassa to Ranchi or by tea estates. Ordinarily passenger vehicles are not permitted to carry goods. Though, however, goods transport by motor in the province is thus limited, we were told that applications were frequently received for permits to run public service goods lorries. The Dy. Commissioner, Ranchi, stated that he had received several but, so far, he had refused to grant permits, as it was not considered that the roads in the district could carry the extra traffic involved. That such applications are being received is an indication that the public is beginning to realize the convenience of motor transport for merchandize, and the railways serving the province should, in their own interests, not lose sight of the possible development of competitive lorry services for goods traffic.

In this connection the following extract from the annual report of the Agent, East Indian Railway, 1930-31, may be quoted, as showing the possible development of long distance inter-provincial motor transport :—

"A short time back, Indian Railways, in order to prevent cruelty, placed an embargo on the transport of monkeys during the hot weather

months, April to July. There is a steady demand abroad for these animals and the export trade is a lucrative one. The result of the Railway declining to carry this traffic has been that dealers now bring these animals by motor lorry to the Ports—in the case of this railway all the way from the U. P. One such lorry carrying monkeys recently met with an accident near Hazaribagh on its way down to Calcutta and was destroyed, many of the animals being killed or injured. The pointer is that the railways cannot count upon a monopoly of even long distance traffic in these times and that our well-meant attempt to save suffering, failed in its object, and incidentally served to foster a competitive means of transport at the expense of railway revenues."

24. *Terminal Taxes.*—The Bengal Nagpur Railway complain of the imposition of terminal taxes collected by the railway on behalf of certain Municipalities in the province. The railway objects to the tax on principle, chiefly because it is a check to railway traffic. We feel that while it is beyond our province to comment on this view of the tax, we are concerned with it, when its imposition favours road traffic as against railway traffic. In Bihar and Orissa this tax is levied by the Municipalities of Puri, and the neighbouring towns of Malatipatpur, Sakhigopal, Delang, Khurda Road, Khandagiri, and Bhubaneswar. The railway gets 3¼ per cent. commission for collecting the tax. The tax is not levied on road traffic by any of these towns, and as, at present, the onus is put on the railway to show whether the imposition of the tax has diverted traffic to the road, the railway is put to the expense of checking road traffic, and compiling statistics.

The B. N. Railway have not given us any figures showing that the railway has lost traffic to the road on account of the terminal tax levied at Puri and the neighbouring towns, and as there are at present no bridges carrying the Orissa Trunk Road over the rivers at Cuttack, or further South, it would not appear that traffic from long distances could follow the road route into Puri. On the other hand, if the taxes were levied at places where a road route would be competitive, they would certainly appear to be sufficiently high to divert traffic to the road, where a similar tax is not imposed on road traffic. The B. N. Railway have furnished us with the following figures showing the tax imposed on certain commodities, and the equivalent extra railway milage such charges represent :—

Commodity.	Tax per maund.	Equivalent Railway milage (local booking).
	Rs. A.	
Piecegoods	4 0	1,213
Tobacco (manufactured)	6 0	1,832
„ (unmanufactured)	0 8	129
Colours, paints	2 0	878
Brass, copper	1 8	438
Bricks and Tiles	0 6	290

CHAPTER IV.—TAXATION AND REGULATION OF MOTOR VEHICLES AND THE GENERAL CONDITIONS OF THE MOTOR TRANSPORT BUSINESS.

25. *Vehicles plying for hire.*—There were during 1931 the following public service or goods vehicles in the province:—

Buses	794
Taxies	613
Goods lorries	212

Under the Bihar and Orissa Motor Vehicles Taxation Act, 1931, motor vehicles are subject to a provincial tax, a schedule of which we give in Appendix 2. A 20-seater motor bus pays a tax of Rs. 342 per annum.

26. *Regulation.*—The only point which calls for comment in the working of the rules framed by the local Government under section 11 of the Indian Motor Vehicles Act, 1914, is that the local Government have been advised that a rule purporting to limit the number of persons to whom permits may be given to run motor vehicles for hire on any road would be *ultra vires* of the rule-making power conferred on local Governments by section 11 of the Act. We have not in other provinces found that section 11 of the Act has been interpreted in this way and the question requires examination, because if it is held that, under the provisions of the Act, local Governments are not empowered to enforce any such restriction, then the Act would presumably require to be amended before any system of zoning or limiting the number of public service vehicles plying on any route could be adopted.

27. *General conditions of commercial motor transport.*—It will be seen that in Bihar and Orissa there are a number of goods lorries. The majority are, we understand, privately owned by piecegoods merchants or concerns, such as tea estates, which have a considerable amount of transport in connection with their business and are not to any great extent employed as common carriers. As regards buses, the general condition appears to be that those which exist are on the whole fairly fully employed and that the conditions common elsewhere of excess of buses over requirements is not reproduced to any great extent in Bihar and Orissa. For instance, we were informed that while about 30 per cent. of the vehicles might be off the road one time for repairs, repainting, and so forth, in Gaya probably three-fourths of the balance are fully employed and get a trip every day which may amount to as much as 100 miles, as there are certain long distance services where no railways exist. In Patna, it was said that the buses actually available for use were probably getting a trip practically every day which may amount to about 50 miles. In Ranchi, we were told that at present the number of buses does not exceed the requirements of the traffic and that all buses are normally fully employed.

28. *Rates of fare charged.*—The rates vary according to circumstances. In Ranchi, for example we were informed that while a maximum of 1 anna per passenger per mile had been fixed by competent authority the fare was generally about 6 pies per passenger per mile unless on a route in competition with the railway where the fare might be as low as 3 pies. In both Gaya and Patna districts the fares appear to be generally as follows:—

In the case of roads parallel with railways.	Approximately the same as third class railway fare.
In the case of feeder roads not parallel with railways.	....
(*a*) Metalled roads	Average of 4 to 5 pies per passenger per mile with a maximum of about 6 pies, and
(*b*) Unmetalled roads	About 9 pies per passenger per mile.

In Orissa where there is not much competition with railways or between buses fares may be as high as fifteen pies per passenger mile.

29. *Prohibition of bus services on certain routes.*—In certain cases where there are light railways running along the berm of the road in which the district board owns a substantial share or which is guaranteed by the district board, *e.g.*, Arrah-Sasaram and Baktiarpur-Bihar, the District Boards have prohibited the plying of public service motor vehicles along the roads.

30. *Time-tables for bus services.*—We were informed in Ranchi district that buses were required to run to a time-table and, in order to prevent over speeding and so forth, have to report their departure and arrival at destination and also where possible at intermediate police stations *en route*. One object of this is that, when buses run to a time table, some trips are more profitable than others and when the buses belong to different owners the buses booked to start at less profitable turns try to encroach on the timings of others.

31. *Overcrowding.*—We gather that, speaking generally, overcrowding is not a serious evil, as at present the buses licensed to ply for hire are more or less in accordance with the requirements of the traffic.

32. *General control.*—It appears to be the general opinion that the control of motor bus services in the matter of the condition of vehicles, running to time-tables, speeds, and over-crowding, which is already fairly efficient in the province, could and should be strict. As regards speed and the possibility of introducing speed governors, we had some interesting information from Mr. Cousins, I.C.S., Collector of Patna, who said that he had endeavoured for some years to enforce the use of speed governors when he had been in the Hazaribagh District but found that, while he had succeeded in prescribing governors of a suitable design, he could not prevent their being tampered with in spite of their being sealed. This is one of the principal difficulties attending the use of the governors.

CHAPTER V.—BRANCH LINE PROJECTS.

33. We have been asked to obtain from local Governments and railway administrations cases where branch line railways have been projected, but where, in view of the development of motor transport, metalled roads would more economically serve the purpose. We give below particulars of railway projects which have been under consideration during the last few years in the province of Bihar and Orissa, and brief comments on them. There would seem to be little scope for further railway development in the province, and it would appear that almost all projects could definitely be abandoned, except perhaps the proposed through connections which will link the Central India Coalfields Railway with the West; and these lines concern the Central Provinces rather than Bihar and Orissa.

A.—East Indian Railway.

34. (1) Saintha-Bausi Railway, with branch to Baidyanath Dham. 115 miles; 5′-6″ gauge. This project has been judged to be unremunerative, and its further consideration has been postponed indefinitely. For a greater part of the way there is a main road alongside the proposed railway alignment, and buses operate between Bhagalpur and Dumka, and Dumka and Rampur Hat.

(2) Hazaribagh Road-Hazaribagh Town. 42 miles; 2′-6″ gauge. This project is also in abeyance owing to poor financial prospects. A first class metalled road connects the two points and bus services operate over it. The E. I. Railway are contemplating through booking with these services. It is difficult to see how narrow gauge trains could compete for passenger traffic, and from the information given us there is little exportable produce in the area served.

(3) Bariarpur-Khargpur-Gaighat. 22 miles; 5′-6″ gauge. This project has been deferred as it is not likely to be remunerative. There is already a metalled road and several buses operate over it along the proposed railway alignment.

(4) Gaya-Shergatti, 22 miles. Originally projected as a broad gauge line, this proposal is to be re-examined when financial conditions permit as a 2′-6″ gauge line. But as there is a good road along the route, it would appear that motor transport would suitably develop the area to be served. Buses already operate over this road.

(5) Barkakana-Ranchi. 35 miles, 5′-6″ (cost 63 lakhs). This scheme is definitely abandoned, and we understand that the Bengal Nagpur Railway have been asked to investigate the possibility of con-

verting the 2'-6" branch from Muri to Ranchi to 5'-6", so as to place Ranchi on the broad gauge. From opinions we gathered at Ranchi, the chief need appears to be a suitable rail service during the night between Patna and Sarak over the E. I. Railway *viâ* Gaya and Gomoh. Sarak is only 32 miles from Ranchi and only ½ mile from the main road running between Hazaribagh and Ranchi, to which a suitable road from the railway station would have to be constructed. We were informed that the East Indian Railway have under consideration the introduction of a through train service, at convenient hours.

(6) Barwadih-Karimati, 137 miles. Barwadih-Katni, 253 miles.

These projects, both on the 5'-6" gauge, would provide through connections with the west for the Central Indian Coalfields Railway. Roads would not serve the purpose of these lines, only short portions of which lie in Bihar and Orissa.

(7) Sone East Bank-Patna ; 75 miles—5'-6". This project was investigated in 1929, but a return of only 3·11 per cent. was anticipated. From opinions gathered during our discussion with Government officials at Patna there did not appear to be a great demand for the railway. The area is, however, not well supplied with roads, though a road through it, along much the same line as that proposed for the railway, has been under consideration. We think that instead of the branch line or a through road, the needs of the area might be adequately served by linking up Daudnagar with Goh and Tekari ; and by running a feeder road westward from Jehanabad to Arwal. A through road might in time seriously compete with the existing railway whereas the connections we suggest would feed it, and would cost appreciably less. We refer to this again in Chapter VI.

(8) Hazaribagh Road-Giridih—19 miles—5'-6". This is not expected to be remunerative and there is already a motorable road between the two points over which a through bus service is working.

B.—Bengal Nagpur Railway.

35. The Bengal Nagpur Railway surveyed three branch line projects in the Orissa Division during the year 1927. These three projects were as follows :—

(*a*) Jagatpur-Kendrapara . . . . . 35 miles—5'-6" gauge.
(*b*) Baitarani Road-Jaipur Road-Jaipur Town . . 13 miles—5'-6" gauge.
(*c*) Bhadrak-Chandbali . . . . . 25 miles—5'-6" gauge.

None of these projects are likely to give a return of more than 3½ per cent. on the capital outlay, and therefore cannot be regarded as remunerative. In all three cases we consider a road would adequately serve the purpose and road projects on all the three alignments are suggested in Chapter VI.

C.—B. & N. W. Railway.

36. The B. & N. W. Railway have four Railway projects under consideration on the Tirhoot State Railway. These are :—

	Miles.
(1) Sidhwalia to Chakia	27
(2) Darbhanga to Muzaffarpur	38
(3) Tiwara to Sitamali	30
(4) Hasanpur to Laheria Sarai	34½

These are all metre gauge lines and their object is to shorten the present circuitous route of the railway and to provide alternative through connections. The question of replacing any of these projects by roads does not therefore arise.

CHAPTER VI.—PROGRAMME OF ROAD DEVELOPMENT.

37. *Existing Road Programme.*—The programme being followed at present was we understand drawn up partly if not entirely for the purpose of utilising the provincial share in the Central Road Development Account, although the cost of the works included goes far beyond the possible receipts of the Province, which are estimated to be something under Rs. 15 lakhs for the five year period. The programme is printed as Appendix 3.

38. *Barhi-Patna-Sassaram Loop Road.*—In so far as this programme was intended to make use of the Central Road Development Account it is natural that its predominating feature should have been main or trunk road development. Items 1, 2, and 3 of the programme in progress and item 1 of the programme awaiting funds are parts of the project for connecting Patna by metalled road with the Grand Trunk Road on both sides of the Sone river which is estimated to cost Rs. 17·17 lakhs. The eastern arm of the loop is approaching completion. The Patna Arrah connection is under discussion with the Government of India.

39. *Ranchi-Sambalpur Road.*—Item 5 of the programme in progress and items 2 to 7 of that awaiting funds which together amount to Rs. 20·94 lakhs aim at the provision of a through bridged motorable road, not necessarily all metalled, between Ranchi and Sambalpur and thence with the Central Provinces and Bombay. That some such through east to west road connection will eventually be provided is highly probable and that such a scheme was clearly in accordance with the primary objects of the Central Road Development Account is clear, but, in agreeing to a provisional classification of roads for the application of the road development account, the Road Conference in its proceedings of April 1930 added a rider that any scheme should be part of a consistent plan of road development, and we venture to think that recent evolution has shown that for consistency what is required is a comprehensive programme of all road requirements from which to select the most urgent and those that give the most immediate return in service to the public. The estimation of the public benefit that will result from the improvement of any road is a matter involving many considerations but as a rough guide we would suggest that the number of people it will affect as represented by the area it will serve and the density of population in that area affords a ready test. By such a test we doubt whether the expenditure of Rs. 19 or 20 lakhs on this scheme would rank very high, in order of urgency of the needs of the province, and although the value and importance of the through road is great, that value will not develop until the road is entirely completed to the minimum standard necessary. No immediate value of this nature attaches to intermediate work and until such a scheme is completed the value of its components must be assessed largely if not wholly on the local benefit. In detail moreover there is one part of the scheme, to which we would

draw attention. From Jharsuguda to Sambalpur a distance of about 20 miles the alignment is parallel with an existing branch line railway and the road is to cost Rs. 7·27 lakhs. This length could not but most seriously affect the railway while duplicating facilities in a tract of country generally devoid of good roads. A more direct alignment from Garpos to Sambalpur, or even a circuitous alignment *viâ* Garpos and Tipirsinga might be considered. The latter would be substantially no longer than the proposed alignment and would serve country at present unserved—it would, however, lie largely in State territory.

40. *Monaguni bridge.*—The provision of this bridge on the Orissa trunk road would remove the only substantial obstacle between Khenda (south of Cuttack) and Ganjam. It is claimed locally that this scheme would be of great benefit, while unlikely to harm the railway. At present the river is passable in the dry season and at such times there is but one motor bus and four taxis plying on it. It is not believed that long distance bus traffic would develop as a result of the provision of this bridge and there would be no objection to zoning to prevent this as the bridge is an important local need. We think, however, the B. N. Railway administration should be given an opportunity of offering its opinion on the proposal.

41. *Nawadah-Sikandra Road.*—This is an important feeder road but would eventually short circuit existing railways and it will doubtless be considered from this point of view.

42. *Gobindpur-Dhanbad-Chas-Gulbera Road.*—This is an important cross link between the Grand Trunk Road and the Purulia-Ranchi Road. For 10 or 15 miles it is parallel with railways in the Dhanbad area and from end to end it short circuits two diverging Broad gauge railways but at such a distance from the junction that an objection on those grounds could scarcely be upheld. But we have ventured to suggest that the whole provincial programme might be reviewed in which case this and other schemes would be reconsidered in due course in consultation with the railways interested.

43. *Bhadrak-Chandbali Road.*—This is an extremely important feeder to the port at Chandbali and is locally placed only second in importance to item No. 14. We would assign to it a high place in any consistent plan. The Bengal-Nagpur railway representative, while not desiring to oppose the project, stated that it might lead to a diversion of passenger and goods traffic to Calcutta by sea, and that traffic might even be transhipped from the railway to the road at Bhadrak with this object. We find it difficult to understand how with a road lead of over thirty miles to the port such a development is likely to occur.

44. *Basta Baliapal Road.*—This is an important feeder but local opinion suggests the consideration as a possibly superior alternative of a road from Jaleswar to Batgaon.

45. *Cuttack-Chandbali Road.*—This is placed third in order of urgency by local opinion. It is however stated that the road is important up to Patanmandi only, thereafter it is of less importance and would be very costly.

46. *Vyas-Sarober Jajpur Road.*—This is placed first in the local order of urgency. It is a short but important feeder not only from Jajpur but from the Orissa trunk road to Jajpur road station.

47. *Other proposals.*—The above programme has clearly a limited objective and it appears from discussions which we were enabled to have with District Officers and members of District Boards that there are a great number of other demands for the improvement of roads and bridges which must at least be considered in any comprehensive plan. Naturally the information which we were furnished on our rapid tour varied very greatly between districts, some putting forward comprehensive schemes and others mentioning merely their most immediate requirements. As an example of this we would mention the following :—

48. *Patna District.*—The Chairman of the District Board has supplied us with a statement of the requirements of his district amounting to no less than Rs. 16½ lakhs and made up as follows :—17 bridges Rs. 6·07 lakhs, improvement of 19 important unmetalled roads by raising and provision of minor culverts, etc. Rs. 1·80 lakhs ; opening out areas by the construction of new unmetalled roads (5 roads) amounting to 51 miles Rs. 1·02 lakhs ; improvement of unmetalled roads by metalling them (6 roads) costing Rs. 3·65 lakhs ; improvement of existing metalled roads (9 roads) Rs. 1·75 lakhs ; improvement of existing bridges, 7 in number, and miscellaneous improvements Rs. 2·25 lakhs.

49. *Gaya District.*—Here the greatest need of the district was stated to be the provision of bridges and metalled roads, or the improvement of gravelled roads, according to traffic requirements, on the following alignments :—

(1) The extension of the Gaya-Sherghati Road to Imamgunj and thence on to the border of the district, 28 miles.

(2) Nawada to Sikandra. This is already in the provincial programme.

(3) Aurangabad to Palmerganj station, 8 miles.

(4) Gaya to Arwal *viâ* Tekari, Kurthi, and Kinjer. Gaya to Tekari is already metalled and the balance would be about 30 miles. Possibly an alternative to this is the provision of 2 cross feeder roads one from Tekari and another from Jahanabad station.

50. *Hazaribagh Road.*—The Deputy Commissioner puts forward the following as being the principal requirements of the district but no estimates of cost have been made. The improvement is necessary

for the transport of mica, lac, jungle and agricultural produce.

	Miles.
(1) Singrawan to Domchanch	26
(2) Domchanch to Jamua	36
(3) Gawan to Kharadiha	26
(4) Gawan to Domchanch	20
(5) Gola to Dakagarha	13
(6) Tandra to Beherabazar and on to Rai Station	6
(7) Chatra to Sherghatti	26

and also the provision of a bridge on the Chatra-Champaran Road.

51. *Ranchi District.*—The Deputy Commissioner, Ranchi, with whom we had a discussion put forward the following for District Board Feeder Roads :

(*a*) Bano-Tangerbansli (on the Ranchi Lohardaga Branch of B. N. Ry.).

6 miles.

Estimated cost Rs. 50,000.

(*b*) (Ratu) Bummu-Rai (on the C. I. C. Ry.).

12 miles.

Estimated cost Rs. 2,00,000.

(*c*) (Bandu) Sonahatu-Turang (on B. N. Railway).

12 miles.

Estimated cost Rs. 1,25,000.

(*d*) Sundega-Barmitrapur (on B. N. Ry.).

24 miles.

Estimated cost Rs. 3,60,000.

(*e*) Ranchi-Kolebira (improvement).

64 miles.

Estimated cost Rs. 3,20,000.

(*f*) Kandara-Khurti.

29 miles.

Estimated cost Rs. 2,00,000.

(*g*) Bundu-Tamar.

9 miles.

Estimated cost Rs. 1,60,000.

But he admitted that the District Board could not maintain its existing roads and that Rs. 500 per mile per year would be required to maintain the roads proposed above when constructed.

52. *Cuttack District.*—Various proposals were put forward for bridging, such as a bridge over the Burah river at Ruria on the road from Mulapal to Jajpur and the possibility of providing bridges cantilevered from the railway bridges on both sides of Cuttack which is at present cut off both north and south. Other proposals were the provision of bridges and culverts along the Mashara-Chhatrapara Road and the improvement and bridging of the Haripur-Karjanga Road, Balichandrapur Road, Baruan-Kalamatia Road and a number of other proposals which we have no space to enumerate.

53. *Sambalpur District.*—From Sambalpur the demand is for the improvement of the Sambalpur-Raipur, Sambalpur-Bamra, Sambalpur-Cuttack, Sambalpur-Bilaspur, Sambalpur-Ranchi Roads of which only the latter appears in the provincial programme. In addition it is stated that the secondary roads of the district are unimproved and unmetalled and with the development of motor transport it is urgently necessary to improve these.

54. *Puri District.*—From Puri the greatest need is said to be the provision of drainage crossings for the roads which lie across the drainage of the country and the raising and protection of roads and in particular the following are mentioned :

Pipli-Astarang Road—total length 32 miles the first 6 miles being metalled, remains submerged for nearly the whole of its length in high flood and about two-thirds remains submerged at ordinary floods. Balighai-Madhan Road is inadequately provided with waterways and requires attention in this respect. Bridges are required at Kanti and Beguniapara over the river Daya and another bridge over the Managuni at Jankia.

55. *Balasore District.*—The greatest need is said to be the metalling of the Bhadrak Chandbali Road which appears in the provincial programme and generally improving the existing roads and providing adequate bridges and culverts.

56. *Need for comprehensive Survey.*—From these various examples quoted which are not exhaustive, it appears to be clear that there exist many urgent requirements for the improvement of roads of all classes in different districts. We are entirely unable to estimate the expenditure which will be necessary in order to improve road communications all round by providing for the most urgent requirements. The amount of money which would be required appears to be so great that any definite standard as an objective of, say, a 10 year programme would be extremely difficult to predetermine, but we venture to think that, were a comprehensive survey to be made of the requirements of the whole province and a selection made therefrom of the most urgent needs and those which would produce the greatest *immediate* benefit and result, some substantial modifications might be found to be necessary in the provincial programme as it stands. We are aware of course that the existing classification of roads into provincial and district board and the limited resources of District Boards present the very greatest difficulty

in drawing up and executing any consistent plan, but as we have ventured to suggest elsewhere, we think that it is for consideration whether the time is not ripe for such a comprehensive survey and the drawing up of a plan of all round development irrespective of the existing classification of roads, as a provincial need to which all available resources should be impartially directed.

57. *Feeder and Link Roads required by Railways.*—(A) *E. I. Railway.*—The East Indian Railway has furnished us with a list of feeder and link roads which they state should be constructed, or improved to facilitate the passage of traffic to and from railway stations in the province. This is printed as Appendix 4. The milage involved is about 800. The railway directs special attention to the requirements of the Central India Coalfield section from Barkakana to Daltonganj as follows :—

C. I. C. Section.—Barkakana to Daltonganj.

" The conditions on this section are very similar to those which prevailed at the opening of the Grand Chord, *i.e.*, rich valleys only partly cultivated, interspersed with hilly forest country, with the difference that there are great possibilities for the development of minerals, especially coal, limestone and possibly copper. The roads serving the area are the Hazaribagh-Ranchi main road, with a feeder road to Bhurkunda, and a road from Ranchi to Daltonganj *viâ* Lohardaga, which is connected with Ray by an unmetalled road. The feeder roads which connect these two main roads with the railway stations on the section are for the most part cart tracks. All the rivers are unbridged and generally impassable during the monsoon. There is therefore considerable scope for road development on this section.

The probability is that with the development of the mineral resources of the area, Ray will become an important depôt station, and therefore communication with Ranchi should be improved by metalling the existing kutcha road between the two points.

There are decided possibilities of the development of an early season fruit and vegetable traffic in the hill districts to the south of Tori, as the climate permits of tomatoes, peas, etc., being available two or three months before the vegetables from the Darjeeling hills are available for the market. Last year, the receipts from tomato traffic at Tori were in the neighbourhood of Rs. 15,000. There is already a road from Tori to Lohardaga, but the improvement of communications in this area will benefit both the cultivator and the railway."

In paragraph 56 we have ventured to suggest that a comprehensive survey might be undertaken to enable a plan of road development to be drawn up. Doubtless, if such comprehensive survey is made the feeder road system required to enable this important railway to develop its capacity would not be overlooked.

(B) *Bengal Nagpur Railway.*—We include as Appendix 6 a short list of feeder and link roads required in the province by the Bengal Nagpur Railway.

(C) *Eastern Bengal Railway.*—The Eastern Bengal Railway have given us an extensive list of feeder and link roads which are for the most part already in existence, and require metalling or other improvements. Included in the list are also a few link roads of an aggregate length of about 20 miles, which the railway requires to be constructed to develop traffic. We print the list as Appendix 6. All the roads are in the Purnea District.

58. In the Government of India letter No. 4255-T., dated 24th June 1932, to local Government, we were asked, when visiting the province of Bihar and Orissa, to ascertain the needs of the River Steam Navigation Companies in regard to feeder roads, and we have been given the following particulars by the India General Navigation and Railway Company, Ltd. of the roads required by that company in the province :—

(i) Siswan Ghat-Savan Road (approximate length 8 miles) to be metalled and widened. Bridges to take motor lorry traffic.

(ii) Ravilganj Ghat-Savan Road (approximate length 28 miles) to be metalled and widened. Bridges to take motor lorry traffic.

(iii) Daruli Ghat-Mairwa Road (approximate length 16 miles) to be metalled and widened. Bridges to take motor lorry traffic.

The India General Navigation and Railway Company, Ltd., state that these roads are of great importance to the Steamer Companies in view of the development in the sugar industry which has taken place recently in Bihar. It should, however, be pointed out that the construction of these roads is likely to affect the interests of the Bengal and North-Western Railway Company, and before the work is undertaken, we consider this Railway Company should be consulted.

CHAPTER VII.—SUMMARY OF CONCLUSIONS.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

59. (1) Conditions as to communications vary very considerably in different parts of the province. To the north of the Ganges the railway system has an extremely small mesh, elsewhere railways are rarer. Similarly the distribution of roads varies considerably in different parts of the province; some portions being comparatively well served, others requiring to be opened up by roads. (Paras. 4, 8 and 9).

(2) Lack of funds generally prevents the improvement of unmetalled roads which are in District Board control. (Para. 5).

(3) It would appear that in the last few years the tendency has been to spend far more money on provincial roads than on district board roads. Particulars as to recent years were not available, but it seems that during 1926-27 only about 20 per cent of the total expenditure on roads was devoted to district board roads. (Paras. 6, 7 and 12).

(4) The condition of provincial metalled roads is generally good. The condition of district board roads is unsatisfactory owing to financial circumstances. (Para. 10).

(5) There is a great need for more bridges in the province. (Para. 11).

(6) There is a strong demand for more feeder roads and short links to villages. (Paras. 12 and 13).

CHAPTER III.—EXISTING STATE OF MOTOR COMPETITION WITH RAILWAYS

(7) The principal railways serving the province are East Indian, Bengal Nagpur, Bengal and North-Western and Eastern Bengal. (Para. 14).

(8) About 28 per cent of the metalled roads in the province are parallel with, and run within 10 miles of railways. Motor competition has not yet assumed important proportions. (Para. 15).

(9) We estimate the loss suffered by the East Indian Railway owing to motor competition at about Rs. 4,00,000. (Para. 17).

(10) The East Indian Railway are making special arrangements to meet motor competition between Patna and Dinapore by adapting a certain number of sentinel road wagons for use on the railway. (Para. 18).

(11) The B. N. Railway place the loss suffered due to motor bus competition at Rs. 2,86,000. (Paras. 19 and 20).

(12) The loss incurred by the Eastern Bengal Railway and the B. & N. W. Railway due to motor bus competition is inappreciable. (Para. 21).

(13) The total loss which it is estimated the railways are suffering due to motor bus competition in the province may be placed at about Rs. 7,00,000. (Para. 22.)

(14) While at present little merchandise moves by road, motor transport, there are indications that demands for this service will grow. (Para. 23.)

(15) The B. N. Railway complain of the imposition of Terminal Taxes by Puri and neighbouring towns, and state that similar taxes are not levied on road traffic. (Para. 24.)

CHAPTER IV.—TAXATION AND REGULATION OF MOTOR VEHICLES AND GENERAL CONDITION OF THE MOTOR TRANSPORT BUSINESS.

(16) Although on certain routes we found that the number of motor vehicles is limited, there is a doubt in the province whether powers to do this are conferred under section 11 of the Motor Transport Act. (Para. 26.)

(17) A number of lorries are used for conveyance of goods chiefly by private owners; there are few goods vehicles plying as public carriers. Passenger buses are generally fully employed. (Para. 27.)

(18) Fares charged by buses are generally the same as by railways, on competitive routes, but higher on other routes. (Para. 28.)

(19) In certain cases where District Boards are interested in light railways, but services are prohibited on roads in competition with such railways. (Para. 29.)

(20) In the Ranchi District time tables are in force in connection with bus services. (Para. 30.)

(21) Overcrowding of buses is not a serious evil. (Para. 31.)

(22) Generally it is considered that the control of buses as regards time tables, speed, overcrowding, etc., should be strict. (Para. 32.)

CHAPTER V.—BRANCH LINE PROJECTS.

(23) The East Indian Railway, some years back, had an extensive programme for branch lines in the province, but, so far as can be seen, none of these would be justified. Many of them follow alignments where there are already motorable roads on which bus services ply. (Para. 34.)

(24) The Bengal Nagpur Railway surveyed three short branch line projects in Orissa Division during 1927, but we consider that in each case a road would adequately serve the purpose. (Para. 35.)

(25) The B. & N. W. Railway have four railway projects under consideration on the Tirhoot State Railway. These projects have for their object either the provision of alternative routes or shortening the present circuitous routes of the railway, and the question of roads instead does not, therefore, arise. (Para. 36.)

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

(26) The programme of future road development has been drawn up in the province for the purpose of utilizing the provincial share in the central road development account. (Para. 37.)

(27) The two largest items in the provincial programme are the linking of Patna with the Grand Trunk Road and a through road between Ranchi and Shambalpur. In regard to the latter we think it possible that the development of local roads is a more urgent need. (Paras. 38 and 39.)

(28) On the Orissa trunk road it is proposed to provide a bridge at Monagumi. The B. N. Railway should be consulted in regard to this project. (Para. 40.)

(29) Two further road projects—Nawadah to Sikander and Gobindpur to Dhanbad, Chas and Gulkera—affect railways, and before these works are undertaken, they should, we consider, be referred to the Railway Administrations for opinion. (Paras. 41 and 42.)

(30) Bhadrak-Chandbali road. Basta-Batrapal road. Cuttack-Chandbali road. Vyas-Sarobar-Jaypur road.

These four roads proposed in the Orissa Division are, we consider, of great importance. (Paras. 43-46.)

(31) We have collected the requirements of several districts for roads (paras. 48 to 55), but venture to think that a comprehensive survey should be made of the requirements of the whole province to enable most important and urgent works to be undertaken first. (Para. 56.)

(32) The E. I. Railway have furnished a list of feeder roads required to be improved or constructed. The E. I. Railway especially call attention to the need of a feeder road system to develop the new Central India Coalfields section. The B. N. and E. B. Railways have also provided lists of their feeder road requirements. (Para. 57.)

(33) The India General Navigation and Railway Company Ltd. have furnished a list of feeder roads required by the Steamer Companies. These roads, if constructed, might affect the Bengal and North-Western Railway, and before the work is undertaken the railway should be consulted. (Para. 58.)

APPENDIX I.

(*See* para. 8.)

Particulars regarding communications in the area having a density of population exceeding 100 per square mile (in this case the entire area).

Area	83,161 square miles.
Population	37,677,576
Average density	453 per sq. mile.

Roads and Railways.

——	Length in miles.	Length per 100 sq. miles of area.	Area per mile of road or railway.	Persons per mile of road or railway.
1. Railways, all gauges	3,310	4·00	25·12	11,400
2. Metalled roads	3,961	3·76	21·00	9,500
3. Improved or motorable metalled roads.	..	..	..	..
4. Other unmetalled roads	28,811	..	..	..
5. Total all roads	32,772	39·40	2·54	1,150

Length of metalled roads parallel with a railway is 1,134 or 28 per cent of metalled road milage.

Area more than 10 miles from any railway—32,620 square miles or 39 per cent of the whole.

APPENDIX 2.

(*See* para. 25.)

[THE BIHAR AND ORISSA MOTOR VEHICLES TAXATION ACT, 1930.]

MOTOR VEHICLES TAXATION.

THE SECOND SCHEDULE.

Description of motor vehicles.	Annual Rate of tax. Rs.
1. Cycles (including motor scooters and cycles with attachment for propelling the same by mechanical power) not exceeding 8-cwt. in weight unladen—	
(*a*) Bicycles—	
(i) not exceeding 200 lbs. in weight unladen . . .	15
(ii) exceeding 200 lbs. in weight unladen . . .	30
(iii) if used for drawing a trailer or side-car, in addition to the tax payable under (i) and (ii) . . .	10
(*b*) Tricycles	40

	For vehicles fitted entirely with pneumatic tyres. Rs.	For other vehicles. Rs.
2. Vehicles (including cycles with an attachment for propelling the same by mechanical power) not exceeding 5-cwt. in weight unladen, adapted and used for invalids	5	5
3. Vehicles (including tricycles weighing more than 8 cwt. unladen) constructed or adapted for use and used solely for the transport of goods in the course of trade—		
(i) not exceeding 12-cwt. in weight unladen	100	125
(ii) exceeding 12-cwt. but not exceeding one ton in weight unladen . . .	125	175
(iii) exceeding one ton but not exceeding two tons in weight unladen . .	250	350
(iv) exceeding two tons but not exceeding three tons in weight unladen . .	300	400
(v) exceeding three tons but not exceeding four tons in weight unladen . .	400	600
(vi) exceeding four tons but not exceeding five tons in weight unladen . .	500	700
(vii) exceeding five tons but not exceeding six tons in weight unladen . .	650	850

THE SECOND SCHEDULE—*contd.*

Description of motor vehicles.	For vehicles fitted entirely with pneumatic tyres.	For other vehicles.
	Rs.	Rs.
(viii) exceeding six tons for every additional ton (including fractions of a ton) an additional	250	450
(ix) if used for drawing a trailer in addition to the tax payable under (i) to (viii), for each trailer	50	50
Provided that two or more vehicles shall not be chargeable under this clause, in respect of the same trailer.		
Explanation.—A vehicle shall not be deemed to be used otherwise than solely for the transport of goods in the course of trade because it is used to convey employees of the trader in the course of their employment.		
4. Vehicles plying for hire and used for the conveyance of passengers—		
(i) seating not more than seven persons .	130	170
(ii) seating more than seven but not more than nine persons	206	250
(iii) seating more than nine persons, for every additional person that can thus be seated up to nineteen, in addition	12	15
(iv) seating more than nineteen persons, for every additional person that can thus be seated up to twenty-two, in addition	16	20
(v) seating more than twenty-two persons, for every additional person that can thus be seated up to twenty-six, in addition	26	32
(vi) seating more than twenty-six persons, for every additional person that can thus be seated	36	45
5. Vehicles other than those liable to tax under the foregoing provisions of this Schedule—		
(*a*) seating not more than one person . .	15	15
(*b*) seating not more than three persons . .	30	30
(*c*) seating not more than seven persons .	50	65
(*d*) seating more than seven persons, for every additional person that can thus be seated, in addition to the tax payable under (*c*)	20	25

APPENDIX 3.

(*See* PARA. 37.)

Programme of future development of roads with costs as far as available.

Serial No.	Names of roads.	Total cost.	Cost of bridges, culverts and causeways.	REMARKS.
	I.—ROADS NOW UNDER CONSTRUCTION OR IMPROVEMENT.	Rs.	Rs.	
1	Bakhtiarpur-Bihar Road . . .	4,28,280	1,35,251	Widening, raising certain portion, metalling, extending the small bridges and culverts to full width of the road, and necessary land acquisition for the widening.
2	Rajauli-Debour Road	1,84,985	76,295	New road. Bridging and metalling complete.
3	Debour-Kodarma Road	1,61,971	65,193	Widening, easying steep grades, removing blind corners and improving blind curves, metalling and necessary land acquisition for diverting the route wherever necessary.
4	Kodarma-Singrawan Road . . .	1,74,777	41,713	Widening, remetalling and necessary land acquisition.
5	Biru-Simdega Road	1,66,812	1,61,210	Widening the existing kutcha road and construction of bridges and culverts.
	TOTAL .	11,16,825	4,79,662	
	II.—ROAD PROJECTS AWAITING TO BE TAKEN IN HAND.			
1	Patna-Arrah (Bihta-Dharara) Road . .	9,42,220	4,85,529	Widening, raising where necessary, metalling and necessary land acquisition.
2	Gumla-Palkot Road	1,22,920	97,811	Improving the existing kutcha road.
3	Palkot-Kolebira Road	1,34,900	1,10,000	Improving the existing kutcha road.
4	Simdega-Deobahar Road . . .	2,82,400	2,65,977	Improving the existing kutcha road.
5	Jharsuguda-Sambalpur Road . . .	3,61,000	1,76,083	New road. To be moorum surfaced and provided with soling where it passes over black cotton soil.
6	Sunk bridge on Ranchi-Sambalpur Road .	6,60,000	6,60,000	
7	Bonum bridge on Jharsuguda-Sambalpur Road.	3,66,000	3,66,000	
8	Monagumi bridge on Cuttack-Ganjam Road (Orissa Trunk Road).	3,00,000	3,00,000	
9	Nawadah-Sikandra Road . . .	3,02,200	53,000	Widening flanks and metalling.
10	Gobindpur-Dhanbad } Chas-Gulbera Road }	2,03,500	1,500	Widening flanks and metalling.
11	Bhadrak-Chandbali Road . . .	10,27,000	2,55,765	Widening, metalling certain portion and diverting the portion of the road through Bhadrak Town, to avoid Bazar crowds.
12	Basta-Baliapal Road	4,32,000	2,38,465	Widening, raising and metalling certain portion.
13	Cuttack-Chandbali Road . . .	2,08,500	..	Metalling certain portion.
14	Vyas Sarober-Jajpur Road . . .	1,32,200	..	Widening and metalling. A bridge may be required in future costing rupees 3 to 4 lakhs over Burra river.
	TOTAL .	54,74,840	30,10,130	

APPENDIX 4.

Railway Feeder Roads required by the East Indian Railway to be constructed or improved.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
1	Manbhum	Gomoh Railway Station	Grand Trunk Road	¾	Requires improvement	District Board.
2	Ditto	Chota-Ambona	Ditto	¾	New Road is required	*Nil.*
3	Ditto	Kaloobathan	Ditto	¾	Ditto	*Nil.*
4	Ditto	Chirkunda (Barakar)	Patalbari	3	The Khudia Nallah about 800 ft. wide, should be bridged. The metal is very much worn out and requires improvement.	District Board.
5	Ditto	Pathardih	Sarsakundi	7	This road should be metalled to enable feeder bus services to be introduced.	District Board.
6	Ditto	Pradhankanta	Beliapore	9	This road to be metalled to enable bus services to be introduced.	District Board.
7	Ditto	Dhanbad	Tundi	12	Road impassable during rains. A feeder bus service was running on this road but has since been withdrawn due to bad roads.	District Board.
8	Ditto	Giridih	Gawan	52	It is a metalled and bridged up to 26 miles and beyond unbridged. Buses ply up to Kharagdiah. A lot of pilgrim traffic can be moved to Baidyanath Dham *vid* Giridih.	District Board.
9	Ditto	Mahesmundi.	Chotki-Khuragdiah	11	Kutcha road to be made pucca and minor rivers bridged. Feeder bus service can be introduced.	District Board.
10	Hazaribagh	Sarak Station	Hazaribagh-Ranchi Road	¼	Station approach road required. Goods traffic to and from Ramgarh and Gora will improve. In the absence of an approach road traffic is carted to the B. N. Ry. station and Bijliband.	District Board.
11	Ditto	Dania	Loogoo	5	The present pathways to be widened with moorum to facilitate the transport of timbers and other forest produce.	District Board.
12	Ditto	Ditto	Jhumra	6		
13	Ditto	Gumia	Bishungarh	22	A gravelled road badly intersected by the Damodar, Bokaro and Konar Rivers. A feeder bus service can be started on this route.	District Board.
14	Ditto	Hazaribagh Road	Dhanwar	19	The road is impassable during the monsoons. A feeder bus service is in operation only in winter months. The road is intersected by the Barakar, Baretha and Arga rivers. The road should be improved to enable bus services to run throughout the year.	District Board.
15	Ditto	Samartand	Jainagar	¾	Kutcha roads to be made pucca	District Board.
16	Ditto	Prasadabad	Markachoo	2		
17	Ditto	Chainpur	Mandu	9	New road required, to join important market near Ramgarh state.	*Nil.*
18	Ranchi	Ray	Mandar *en route* Ranchi	18	Proposals for running a bus service on this route have been held up by the condition of the road. Passengers from Up country stations travel *vid* Chandwa. If this road is improved passengers will travel *vid* Ray, with the result that the earnings from passengers in the up direction will be increased.	District Board.
19	Palamau	Daltonganj	Garwah Town	21	The road is impassable during the monsoons, and a feeder bus service is in operation only during the winter months. There are 4 unbridged rivers including the Koel. The road should be improved to enable the bus service to operate continuously throughout the year.	District Board.
20	Ditto	Ditto	Hariharganj	43	There are 6 unbridged rivers, including the Amanat on the road and the road is impassable during the monsoons, resulting in the suspension of feeder bus services during the monsoon.	District Board.
21	Ditto	Ditto	Panki	28	Feeder bus services stop running in rainy season. There are 10 miles of unmetalled section which should be metalled and three minor bridges require attention.	District Board.

Railway Feeder Roads required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
22	Palamau . . .	Daltonganj . .	Patan	16	Feeder bus services ply only in fair weather. If this road is metalled, buses will ply all the year round improving the traffic of Daltonganj.	District Board
23	Ditto . . .	Untari Road . .	Nawal Hatia . .	14	A new road is required to develop the traffic in biddy leaves. The present transport cost is rather heavy especially during the monsoons. Additional traffic in grain, oil-seeds and bamboos will also be developed.	*Nil.*
24	Ditto . . .	Ditto . . .	Nagar Untari . .	20	The proposed road will improve passenger traffic both from Palamau and Mirzapore Districts. Besides, there are several big marts situated on this route and several zamindary Estates are also located in this area.	*Nil.*
25	Ditto . . .	Kechki . . .	Kechki village . .	4	The present track should be converted into a road to enable traffic to move all the year round. At present traffic is at a standstill during the rainy season.	District Board.
26	Ditto . . .	Latehar . . .	Nawagarh . . .	3	For about ½ mile there is a pathway only. A road to this place would improve the lac traffic and result in an increase of passenger traffic at Latehar.	District Board.
27	Ditto . . .	Ditto . . .	Bajkunar . . .	1½	In the monsoon traffic is stopped. If the road is improved it will improve the lac and passenger traffic.	District Board.
28	Ditto . . .	Ditto . . .	Latehar Town . .	4	There is a Sub-Divisional Court and a thana at Latehar Town, but owing to difficulty of road transport from the railway station to the town, passengers prefer to avail of the bus service plying between Daltonganj and Ranchi and reach their destination without crossing the river Auranga. If the road is improved and the river bridged, traffic of this station will improve.	
29	Ditto . . .	Garhwa Road . .	Banahala . . .	33	To be metalled. It is impassable during rainy season. Traffic will improve if this road is metalled.	District Board.
30	Ditto . . .	Tori	Balumath . . .	16	Traffic in lac, bamboo, ghee and fresh vegetable will greatly increase if this road is metalled.	District Board.
31	Sahabad (Arrah) . .	Banahi . . .	Sahapur . . .	3	To be metalled	District Board.
32	Ditto . .	Dehri-on-Sone . .	Nasriganj . . .	14	Kutcha road partly raised and bridged but impassable during rainy season. Nasriganj is a big mart for jagree. The improvement of this road will lead to the development of goods traffic in this area, which is very rich in Agricultural produce.	District Board.
33	Ditto . .	Sasaram . . .	Malahipur . . .	21	Kutcha road, impassable during rainy season. Permanent pucca road will permit of the free movement of traffic all the year round.	District Board.
34	Ditto . .	Bhabua Road . .	Pajrawan *vid* Ramgarh .	20	Kutcha unbridged road used with difficulty in rainy season. The improvement of this road will help to develop the goods traffic of the area north of Bhabua Road station.	District Board.
35	Patna	Taregna . . .	Pali *vid* Mushari and joining the Kako-Banduganj Road.	12	Unmetalled. It is understood that the metalling of this road is under contemplation. The improvement of this road will greatly facilitate the movement of traffic.	District Board.
36	Gaya	Nawadah . . .	Gobindpore *vid* Barco and Bakasti.	14	Only 3 miles are pucca. Beyond Bakasti the road passes over the bed of the river Sakri. The road is impassable during the monsoon necessitating the suspension of the feeder bus service between Nawadah and Gobindpore.	District Board.
37	Ditto . . .	Paharpur . . .	Barachetti *vid* Luckhipore.	17	There is a bus service running between Gaya and Barachetti. If this road is improved the activities of buses will be diverted to this route, resulting in increased revenue to the Railway.	District Board.

APPENDIX 4—*contd.*

Railway Feeder Roads required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
38	Gaya	Gurarau	Gurarau village	13	There is no road. Only 4 miles were constructed by the District Board, Gaya, but it was abandoned for want of funds. If this road is constructed it will connect with the Gaya-Aurangabad Road and will cater for both goods and passenger traffic in the new neglected area.	District Board.
39	Ditto	Ditto	Gaya-Daudnagar Road	8	The road will pass through important villages and join Koch on the Gaya-Daudnagar Road also Tikari and will help the development of the surrounding villages.	*Nil.*
40	Ditto	Rafiganj	Deo	8	Passable with very great difficulty during the monsoon.	District Board.
41	Ditto	Jakim	Baur	3	Requires repairing. It will develop the traffic from the northern part of the station.	District Board.
42	Ditto	Ditto	Rafiganj-Aurangabad Road.	3	There is no road from Jakhim to the south.	*Nil.*
43	Ditto	Pheaser	Aurangabad	7	Both surface roads and unbridged	District Board.
44	Ditto	Ditto	Hanspura	17		
45	Ditto	Jehanabad	Banduganj *vid* Koke	10	Metalled only 4 miles, the remainder will be taken in hand shortly.	District Board.
46	Ditto	Ditto	Kurtha *vid* Shakurabad	13	This requires improvement. It is metalled for 2 miles.	District Board.
47	Ditto	Ditto	Arhwal	22	Partly impassable during monsoons, as it is unbridged. Metalling has been taken in hand, this will be an important road.	District Board.
48	Ditto	Tehata	Malhati village	5	A new road is necessary. The traffic movement is towards Gaya. In the absence of a proper feeder road the traffic moves *vid* Mukdampore station below Tehata towards Gaya.	*Nil.*
49	Ditto	Bela	Khidirserai	8	The present road is merely a surface road, unbridged, impassable during rains. If this road is improved it will develop both passenger and goods traffic of Khidirserai, Patharkoti and Atri and surrounding places.	District Board.
50	Ditto	Mukdampur	Shakurabad *vid* Pic-Bigha	16	Track road only, unbridged. Road is practically impassable during rains. With the improvement of road the traffic of the area directly to the west of Mukdampur station will be developed.	District Board.
51	Ditto	Ditto	Dharao	7	This road joins Jehanabad and Halusaganj road. The latter road is a track road and traffic is moved with great difficulty during monsoons.	District Board.
52	Ditto	Bela	Tikari village	10	Present road is a surface road, unbridged, and metalled for 1½ miles only from Bela. Tikari is a big centre for merchandise. With the better maintenance of the road it will tend to improve the traffic of Bela station.	District Board.
53	Ditto	Ankora	Mandar Simra	3	Present road to be improved with a view to remove the difficulties experienced during rainy season which retards the movement of traffic.	District Board.
54	Ditto	Warsaliganj	Kauakol	22	During rainy season feeder bus services operating between these points have to be suspended on account of the impassable condition of the road.	District Board.
55	South Monghyr	Kajra	Surajgarh	6	Unmetalled road. Requires improvement in order that the feeder bus services operating on this road may run all the year round. It is suspended during the monsoons.	District Board.

APPENDIX 4—*contd.*

Railway Feeder Roads required by the East Indian Railway to be constructed or improved—contd.

Serial No.	District.	From	To	Length miles.	Relevant remarks.	Authority at present responsible for maintenance.
56	South Monghyr . .	Luckeeserai . . .	Sikandra . . .	16	Only 2½ miles are metalled. Feeder bus services ply only in fair weather. Buses suspend running during rainy season on account of the impassable condition of the road resulting in the loss to the railway revenue.	District Board.
57	Ditto . .	Sheikhpura . . .	Arrah	15	Only 2 miles are metalled. During monsoon passengers travel *viâ* Jammooee bus service to Monghyr with the result that this railway lose receipts from Sheikhpura to Monghyr.	District Board.
58	South Bhagalpur . .	Pirpainti . . .	Barahat . . .	6	Unmetalled. Passable with difficulty in monsoon.	District Board.
59	Ditto . .	Colgong . . .	Ditto . . .	8	Ditto . . .	District Board.
60	Santal Parganas . .	Pakur (West) . .	Amrapara . . .	18	Part pucca and kutcha. Links up with Amarpara as well as with Sultanpur in Bengal. Will increase traffic of Pakur.	District Road Committee, Dumka.
61	Ditto . .	Pakur (East) . .	Dhulian-Ganges . .	10	The present track is impassable during rains and if it is improved an increase in hides and skins traffic is expected.	District Road Committee. Dumka.
62	Ditto . .	Jamtara . . .	Dumka *viâ* Fatehpur .	46	Existing road should be raised and metalled throughout and the intermediate rivers, *viz.*, the Ajai (300 ft.) and the Maurakhi (50 ft.) bridged. This will enable passengers from the interior to travel *viâ* Jamtara instead of *viâ* Deoghar.	District Road Committee, Dumka.
63	Ditto . .	Ditto . . .	Kundahat . .	28	There are 5 unbridged rivers on this road which required to be bridged.	District Road Committee, Dumka.

APPENDIX 5.

(*See* para. 57.)

Feeder and link roads required in the Province by the Bengal Nagpur Railway.

Station.	Railway Comml. Dist.	Civil District	District Board.	No. of roads to be built.	Proposed Road Facilities.			Milage.
					Nature of roads to be built.	Names of villages. (Trade centres proposed to be connected with stations.)	Reasons for construction.	
Lakshanath Road .	Khargpur .	Balasore .	Balasore .	1	Metalled .	To connect the station with the existing main metalled road running to the west of the station. Distance ½ mile.	Appreciable development and increase of betel leaf traffic from Baltamohanpur, a big centre.	½
Bijulia . . .	Adra . .	Hazaribagh .	..	1	Do. .	Approach road from Hazaribagh-Ranchi Road.	Development of traffic at the new station.	
Keonjhar Road . .	Waltair .	Balasore .	Balasore .	1	Do. .	Approach road to connect the main District Board Road running at right angles to the Railway line near the Up Outer Signal (distance about ½ *mile* from the station) so as to link up the 9 villages —Bonthapur, Runthiya, Cowper, Bhadrak, New Market, Agunapada, Tilo, Anandapur, Kundla and Bouth.	This would provide a good feeder road to the station, serving all the 9 villages in the vicinity.	½
Jaleswar . . .	Khargpur .	Do. .	Do. .	1	Do. .	To connect the station with Baitamohanpur, an important trade centre.	Development and increase of betel leaf and the outward traffic.	
Bahanaga Bazar . .	Do. .	Do. .	Do. .	1	Do. .	To link the station up with "Junia Hat", a big trade centre—*Distance 3 miles.*	Development and increase of traffic.	3

APPENDIX 6.

(*See* para. 57.)

Feeder roads which the Eastern Bengal Railway suggest should be constructed or improved.

Name of Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	Road in existence or required.	REMARKS.
Manshahi . .	Manshahi .	Haflaganj . .	1 mile . .	Purnea .	Kutcha . .	In existence .	Requires raising. Expected an increase to an extent of about 100 mds. daily in traffic from Haflaganj.
Sonaili . . .	Purnea . .	Paranpur *vid* Chandpur Kadwa and Sonaili.	45 miles .	Do. .	Road from Sonaili Bazar to Bhagaon about 2 miles is pucca and rest kutcha.	Do. .	Existing road required earthwork. One bridge over Sandh Dhar about 5 miles south and another bridge near Majhati village about 4 miles south from Sonaili station are required.
....	Sonaili Station	Sadar Local Board Road No. 54.	600 ft. .	Do. .	Kutcha . .	Do. .	Used throughout the year. This road needs metalling and bridging of culvert at the junction of this road and road No. 54.
Salmari . . .	Purnea . .	Rezia Bazar . .	42 miles .	Do. .	Do. . .	Do. .	It can be used only during fair weather.
Barsoe . . .	Barsoe . .	Balarampur . .	6 ,, .	Do. .	Do. . .	Do. .	Ditto.
....	Do. . .	Barsoe Bazar .	3 ,, .	Do. .	Do. .	Do. .	Ditto.
....	Do. . .	Abadpur . .	8 ,, .	Do. .	Do. . .	Do. .	Ditto.
Lava . . .	District Board Crossing.	Roshua Bazar .	½ mile .	Do. .	Do. . .	Do. .	This road can be used throughout the year. The road which connects the feeder road on the south of the station and runs up to Roshua Bazar requires to be widened and raised. Expected to improve traffic with Roshua, a big market.
Rautara . . .	Rautara . .	Rautaraghat . .	1 ,, .	Do. .	Do. . .	Required . .	To secure traffic which at present goes to CRR, NNA (B. & N. W. Ry. stations). Can be used throughout the year.
....	Rautaraghat .	District Board Road on the other side of the river.	1½ miles .	Do. .	Do. . .	Do. .	No bridge will be required to be built at Ragiganjghat if the proposed Rautaraghat bridge is constructed.
....	Katihar . .	Raziaganj . .	4 ,, .	Do. .	2 miles pucca, 2 miles kutcha.	In existence .	2 miles metalled under District Board, Purnea, and 2 miles kutcha under Purnea Local Board. Two miles kutcha road if metalled may be used throughout the year. Expected to bring in tobacco throughout the year from Razia Bazar.
....	Rezinagar .	Harda . . .	2 ,, .	Do. .	Kutcha . .	Do. .	If a bridge is constructed on the Uoshi river, it may be used throughout the year. Tobacco traffic is expected to be secured.
Purnea . . .	Purnea Goods Shed.	Darjeeling Road .	200 yds. .	Do. .	Do. . .	Do. . .	Requires to be repaired.
Arariya . . .	Arariya Civil Line Gate.	Fatigua . .	8 miles .	Do. .	Do. . .	Do. .	The road can be used during fair weather. Requires raising and bridging. Expected to increase Traffic. Traffic is also expected during rainy seasons and is carried *vid* Arariya Town which is at a great distance.
Simraa . .	Simraha . .	Raniganj . .	8 ,, .	Do. .	Do. . .	Do. .	Requires general repairs.
...	Do. . .	Simurbani . .	9 ,, .	Do. .	Do. . .	Do. .	Repairs required in some places.
....	Do. . .	Patangar . .	12 ,, .	Do. .	Do. . .	Required . .	One bridge and 3 culverts will be required. Will be used for motor car traffic throughout the year.
Dalkhola . .	District Board Road.	Chilhapara . .	7 ,, .	Do. .	Do. . .	In existence .	It can be used during fair weather only. Widening, raising and bridging required. Jute traffic may increase.
....	Do. .	Kali Bari . .	4 ,, .	Do. .	Do. . .	Do. .	Ditto.

Feeder roads which the Eastern Bengal Railway suggest should be constructed or improved—contd.

Name of Railway Station.	From	To	Approximate distance.	Civil District.	Condition of the road.	Road in existence or required.	REMARKS.
....	Dalkhola .	Howalganj . .	4 miles .	Purnea .	Kutcha . .	Required . .	Expected to secure jute, grain and seed traffic to the extent of about 1,000 mds. yearly.
Kanki . . .	Kanki . .	Chakliaghat . .	6 ,, .	Do. .	Do. . .	In existence .	General repairs required and a bridge over Balajor river will be made. It is possible for motor cars to ply all the year round. Passenger and tea traffic expected to be increased.
Kishanganj . .	Kishanganj .	Dighhat *vid* Bahadurganj.	28 ,, .	Do. .	4 miles metalled and rest kutcha.	Do. .	Should be metalled up to Bahadurganj (an important jute producing centre). Two bridges Towalia and Gopalpur and two culverts to be constructed. Traffic is expected to be increased considerably if this is arranged. The District Board has made a proposal to construct a bridge only near Gopalpur.
Do. . .	Do. .	Pawakhali . .	14 ,, .	Do. .	Kutcha . .	Do. .	The road should be metalled and this will increase traffic by 50 mds.
Do. .	Do. .	Majkuri *vid* Sautha	23 ,, .	Do. .	Do. . .	Do. .	Requires to be repaired. Two bridges to be constructed near Burimashi and Topamari. If this is done jute traffic is expected to increase by 25 per cent.
Do. . .	Do. .	Bhadeswari . .	17 ,, .	Do. .	1 mile pucca and rest kutcha.	Do. .	Should be metalled.
Do. . .	Do. .	Gongaon . .	16 ,, .	Do. .	Kutcha . .	Do. .	Ditto.
Do . .	Do .	Totalia *vid* Motihari	38 ,, .	Do. .	Do. . .	Do.	Requires to be bridged in certain places and to be raised from Motihari to Totalia.

Do. .	Do. .	Kulti . . .	7 ,, .	Do. .	Do. . .	Do. .	Can be used throughout the year Some earthwork is required to improve the road. Traffic may increase by 25 per cent. nearly.
Baraharakothi. .	Baraharakothi	Dhamdaha . .	6 ,, .	Do. .	Do. . .	Do. .	Requires raising.
....	Do. .	Bhowanipur . .	12 ,, .	Do. .	Do. . .	Do. .	Ditto.
....	Do. .	Gauripur . .	3 ,, .	Do. .	Do. . .	Do. .	Ditto.
Janakinagar . .	Station . .	Dhamda . .	6 ,, .	Do. .	Do. . .	Do. .	Can be used during fair weather. The portion from the railway station to the Local Board Road requires general repairs to facilitate traffic.
Krityanandanagar .	Parara . .	Parara Baluatala 1 mile off from Station.	1 mile .	Do. .	Do. . .	Required . .	To connect village Parara directly with station as an extension of D. B. Road; from Baluadhor tobacco traffic expected to increase by 1,000 mds. yearly.
Banmankhi . .	Banmankhi .	Parara . . .	8 miles .	.	Do. . .	In existence .	Bridge and road require thorough repairs to make it convenient for traffic.

7. CENTRAL PROVINCES.

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CENTRAL PROVINCES.

CHAPTER I.—INTRODUCTORY.

1. *Officials assisting us in the Central Provinces.*—(*a*) Mr. J. A. Baker, C.I.E., Chief Engineer and Secretary, Public Works Department, arranged for information and statistics in regard to road development in the provinces to be collected by the time we visited Nagpur. He also drew up for us a programme of meetings with District Board officials and a short tour of Berar which included visits to Amraoti and Akola.

(*b*) Mr. R. D. Ratnagar, Executive Engineer, Public Works Department, was placed on special duty to examine the material and collect the information and statistics required for this report; he accompanied us during our tour of the provinces and provided us with transport.

(*c*) The Great Indian Peninsula Railway deputed Mr. J. T. Day, Senior Assistant Traffic Manager and Officer-in-Charge, Survey of Motor Bus Competition, to travel with us while we were in the area of the provinces served by that railway; and Mr. M. G. Jhangiani, Divisional Traffic Manager of the same railway, Nagpur, also accompanied us. Both these gentlemen attended the meetings held with District Officials.

(*d*) Mr. Mazumdar, Publicity Officer of the Bengal Nagpur Railway, met us at Nagpur, and attended the district meetings held in that place. He also provided us with information in regard to road competition with his Railway in the Central Provinces.*

(*e*) We take this opportunity of recording our appreciation of the ready help afforded us by all these gentlemen.

2. *Brief Itinerary and meetings held.*—(*a*) We reached Nagpur on September 23rd and stayed there two days during which we examined the information collected for us and interviewed district officials. A meeting representative of unofficial as well as of official opinion was held during our visit and was presided over by Mr. J. C. Bourne, I.C.S., Deputy Commissioner, Betul district. At this meeting the following gentlemen were present:—

Mr. W. V. Grigson, I.C.S., Deputy Commissioner, Nagpur.

Mr. C. Middleton Stewart, Deputy Inspector General of Police.

Mr. R. D. Ratnagar, Officer on special duty, Public Works Department.

Mr. G. R. Pradhan, Chairman, Nagpur District Council.

Mr. Rangaswami, District Engineer, Nagpur District Council.

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* The Bengal Nagpur Railway also furnished us with an interesting note by Mr. O'Reilly, District Traffic Superintendent of the Satpura Railway.

Rao Bahadur M. G. Deshpande, Managing Director, Central Provinces and Berar Provincial Co-operative Bank and Landlord, Nagpur.

Mr. E. H. Bartlett, Central Provinces Manganese Ore Co., Ltd.

Mr. V. P. Kolte, Pleader (Central Provinces and Berar Motor Bus Association).

Mr. Alimahomed Chinoy, Motor Dealer (Bombay Garage).

Mr. E. C. Eduljee, Motor Dealer.

Mr. J. T. Day, Senior Assistant Traffic Manager and Officer-in-Charge, Survey of Motor Bus Competition, Great Indian Peninsula Railway.

Mr. M. G. Jhangiani, Divisional Traffic Manager, Great Indian Peninsula Railway, Nagpur.

Mr. L. M. Mazumdar, Publicity Officer, Bengal Nagpur Railway.

(*b*) On September 25th we proceeded to Amraoti, and during the afternoon had a preliminary discussion with Mr. G. P. Burton, I.C.S., Commissioner, Amraoti Division, Mr. P. J. H. Stent, I.C.S., Deputy Commissioner, Amraoti, and Mr. Nix James, Executive Engineer, Public Works Department, for the 26th a representative meeting had been arranged at which the following gentlemen were present:—

Mr. G. P. Burton, I.C.S., Commissioner, Amraoti Division.

Mr. P. J. H. Stent, I.C.S., Deputy Commissioner, Amraoti.

Mr. Nix James, Executive Engineer, Public Works Department.

Mr. R. D. Ratnagar, Executive Engineer, Public Works Department.

Mr. S. Y. Patil, Chairman, District Council, Amraoti.

Mr. A. N. Chatterji, District Council Engineer.

R. B. K. V. Brahma, C.I.E., M.B.E., B.A.,LL.B., President, Berar Co-operative Institute.

Mr. S. G. Mutkeker, M.Sc., Agr., Deputy Director, Agriculture, Amraoti.

K. B. Abdul Kadir, B.A., LL.B., Pleader.

Mr. J. B. Deshmukh, Landlord.

Mr. J. T. Day, Senior Assistant, Traffic Manager and Officer-in-Charge, Survey of Motor Bus Competition, Great Indian Peninsula Railway.

Mr. M. G. Jhangiani, Divisional Traffic Manager, Great Indian Peninsula Railway, Nagpur.

(*c*) On September 27th we had a preliminary discussion at Akola with Mr. Permanand, I.C.S., Deputy Commissioner, Akola, Mr. E. V. A. Peers, District Superintendent of Police, Mr. C. B. Roy,

Executive Engineer, Akola District, and Mr. H. G. Nargundkar, Sub-divisional Officer, Khamgaon, in the Buldana District. The Great Indian Peninsula Railway officers were also present. Subsequently a general meeting representative of many interests and localities took place and at this, in addition to those mentioned above, the following were present:—

Mr. A. Y. Athalyne, President, Municipal Committee, Akola.

Mr. S. A. Pande, Pleader, Vice-President, Municipal Committee, Akola.

Mr. T. S. Korde, Chairman, District Council, Akola.

Mr. S. M. Rahim, M.L.C., Akola.

Mr. D. Y. Rasurker, M.L.C., Akola.

Mr. S. G. Bapkal, M.L.C., Akola.

Mr. Missa R. Bey, M.L.C., Akola.

Mr. R. M. Gupta, Pleader, President, Motor Owners and Drivers Association, Akola.

Mr. M. D. Bhagwat, Lakshmi Oil Mill Co., Akola.

Mr. K. J. Dastur, Inspecting Officer, Motor Vehicles Department, Akola.

Mr. B. C. Deshmukh, Member, District Council, Akola.

Mr. G. R. Kothare, Factory Owner and Cotton Merchant (Chairman, Central Provinces and Berar Factory Owners Association), Khamgaon.

Mr. U. N. Thakur, B.A., M.L.C., Vice-Chairman, District Council, Akola, Akot.

Mr. K. G. Deshmukh, Murtizapur.

Mr. N. R. Mahajan, Vice-Chairman, Local Board, Mangrulpir.

Rao Sahib Shamrao Bapoorji, Chairman, Local Board, Balapur.

Mr. S. N. Pande (of Sirpur), Basim.

Mr. G. R. Bohgle, Sub-divisional Officer, Public Works Department, Buldana.

Mr. R. N. Swayanamshi, Buldana.

Mr. G. B. Dharmapillai, Karenja.

(*d*) Altogether we travelled 916 miles by railway, and 189 by road in the Central Provinces.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

3. *General.*—The area of the Central Provinces excluding States is 99,920 square miles and the population, according to the 1931 census, is 15,507,723 giving an average density of population of 155 per square mile. There are 1,633 miles of broad gauge railways, 38 miles of metre gauge and 830 miles of narrow gauge, a total of 2,501 miles; the various railways serving the province being the Great Indian Peninsula, the Bengal Nagpur, and the Bombay, Baroda and Central India in one corner. There are 5,135 miles of metalled or hard surfaced roads of which 4,844 miles are provincial and 291 miles are local, *i.e.*, in charge of district boards. There are also 2,397 and 1,109 miles respectively of improved (Class II) and unimproved (Class III) unmetalled roads, some 2,266 miles of these being provincial and 1,240 miles local. Unmetalled unimproved roads are " professionally aligned " (Class III) roads and are, in general, not motorable. Of the metalled or hard surfaced mileage, there are 27 miles of surface treated water bound macadam, the balance being ordinary water bound. Of the 4,844 miles of provincial metalled roads 1,147 miles are " transferred roads ", *i.e.*, are maintained by local bodies who receive the actual cost of maintenance *plus* 15½ per cent. establishment charges. Similarly of the 2,266 miles of provincial class II and III roads 823 miles are " transferred ".

4. *Classification of roads in the province.*—Extra municipal roads fall into two classes (*a*) Provincial, maintained from provincial revenues, by the Public Works Department, or " transferred " as described above, and (*b*) District Board, maintained by district boards from their own resources supplemented by certain general purpose grants from provincial revenues.

5. *Expenditure on roads.*—The expenditure on roads of all classes for a period of years ending with the year 1926-27 was given in statement F at page 99 of the report of the Indian Road Development Committee. The expenditure in subsequent years has been as follows:—

—	Original Works.		Repairs.	Total from Revenue.
	From loan.	From Revenue.		
1927-28.		Rs. Lakhs.	Rs. Lakhs.	Rs. Lakhs.
Provincial . . .	..	28·42	37·99	66·41
Local	..	5·91	11·46	17·37
Total .	.	34·33	49·45	83·78

	Original Works.		Repairs.	Total from Revenue.
	From loan.	From Revenue.		
		Rs. Lakhs.	Rs. Lakhs.	Rs. Lakhs.
1928-29.				
Provincial		24·18	33·62	57·8
Local	..	5·05	10·10	15·15
Total	..	29·23	43·72	72·95
1929-30.				
Provincial	5·11	16·29	33·69	49·98
Local	..	1·17	5·70	6·87
Total .	5·11	17·46	39·39	56·85
1930-31.				
Provincial	10·31	9·91	31·91	41·82
Local	..	·44	2·18	2·62
Total .	10·31	10·35	34·09	44·44

In the four years ending 1930-31 provincial revenue expenditure amounted to Rs. 216·01 lakhs out of a total of Rs. 258·02 lakhs; that is some 84 per cent. of expenditure has been from provincial funds. Out of a total length of roads of all classes of 8,641 miles, 7,110 miles or 82 per cent. are provincial; whilst of 5,135 miles of metalled roads, 4,844 miles or 94 per cent. are provincial.

6. *Communications in relation to the area and population served.*—In order to enable a comparison to be readily made of the state of communications in different provinces, unaffected by the presence or absence of large desert or forest areas, we present certain statistics upon the basis of the total area and population of districts having a density of population of 100 per square mile and over. In the Central Provinces the only districts excluded from consideration by this formula are Chanda and Mandla. In Appendix I attached will be found certain particulars for the area excluding these districts. From this it will be seen that the mean density of population over that area is 167 per square mile; that the area served by one mile of railway is 37·45 square miles; and that the area served by each mile of metalled road is 17·98 square miles, and by all roads taken together 11·4 square miles. In the area with which we are dealing of 85,581 square miles, an area of about

47,000 square miles or 55 per cent. is more than ten miles from any railway. Of the 4,760 miles of metalled road in this area, 1,682 miles or 35 per cent. are parallel with a railway and within 10 miles of it, and of 2,290 miles of railways, 73 per cent. are thus paralleled by metalled roads.

7. *Major Bridges.*—No description of the general conditions in the Central Provinces would be complete without a reference to the question of road bridges. There are many large rivers, *e.g.*, the Mahanadi, the Nerbudda, the Tapti, the Wainganga, the Wardha, the Purna, the Hiran, etc., etc., and while many are provided with road bridges, there appear to be no less than 12 main road crossings where there are boat, pontoon or temporary pile bridges in the dry season and ferries for the rest of the year. In addition, there are innumerable other places where interruption to a greater or less extent may occur at times of flood. The rivers are often the boundaries between districts and the flow of local trade and travel has from the immemorial adjusted itself to the limitations imposed by these barriers; but that, with the increasing range of road transport now possible, certain of these may give rise to serious inconvenience and restriction of traffic cannot be doubted. The bridging of certain of these obstacles would clearly fall to be considered as part of any consistent plan of road development. We are not however called upon and would be unable in the time at our disposal, to suggest the extent to which bridging should, from the point of view of economic development, be assigned any priority of importance.

8. *Submersible bridges.*—An interesting feature of the Central Provinces road system is the development of the use of submersible bridges. In mountainous country with quick run off of rainfall, spate and peak floods of great magnitude may occasionally occur and bridges designed above the level of the highest probable flood would be needlessly extravagant. Properly designed submersible bridges will pass abnormal floods over the top, and over a period of years such bridges may give 95 per cent. utility for little more than half the cost of a cent per cent. bridge. This type of bridge which is known elsewhere in India and other countries has been developed to a marked degree in the Central Provinces.

9. *General Condition of Roads.*—Metalled roads are generally very good indeed and are maintained to a standard that will challenge comparison with those elsewhere in India. Owing to the wide distribution of good trap rock this excellent condition of roads is possible at low cost. We have pointed out that at present there are only 27 miles of surface treated water bound macadam, the rest being untreated water bound. The average cost of maintenance of the latter appears in the neighbourhood of 600 or 700 rupees per mile per year, although in a few cases, *e.g.*, 24 miles of the Nagpur-Itarsi Road, 20 miles of the Akola-Hangul Road and the whole of the Great Eastern Road in Nagpur district, the cost is in excess of Rs. 1,000 per mile per year. Water bound macadam while providing an excellent surface gets extremely dusty at times

of prolonged dry weather, and with the extended use of motor transport dust is becoming a nuisance and even a source of danger, which through towns and villages is more acute. As a general proposition it is probable that where the cost of maintenance exceeds Rs. 1,000 per mile per year surface treatment with tar or bitumen, while greatly mitigating the dust nuisance may even prove to be economical or at least no more expensive than frequent renewals with stone. Still the number of miles of road where the present cost of maintenance renders surface treatment an economic proposition is relatively low and it seems that as time goes on it may be necessary to envisage a definite increase in the maintenance bill over those sections where it becomes necessary to adopt surface treatments to reduce dust. The cost level at which we have suggested that the change over to surface treated macadam may be possible, has been suggested in relation to the cost of maintaining such surfaces in the earlier years of the treatment. There is every reason to believe that, with the passage of time, as a surface mat is built up by the process of successive applications of tar or bitumen, the life of individual treatments will be prolonged and the average cost of maintenance correspondingly reduced. When the possibility of conversion depends upon a matter of a couple of hundred rupees per mile one way or another considerable experience is necessary to determine whether or not conversion will be economical, and it is for consideration whether having regard to the eventual necessity of such conversion on a major scale, somewhat more extended trials of surface treatments in different parts of the provinces and with different intensities of traffic might not with advantage be undertaken at this stage in order that, when the time for conversion comes, more definite information may be available as to the ultimate cost of maintaining surface treated macadam under varying conditions. We have ventured to refer to this matter at some length because in considering programmes of future road development the possibility of the maintenance bill on existing roads having to be substantially increased in the future is pertinent.

CHAPTER III.—MOTOR COMPETITION WITH RAILWAYS IN THE CENTRAL PROVINCES.

10. *Railway Administrations serving the Central Provinces.*—The Central Provinces are served on the west by the Great Indian Peninsula Railway, and on the east by the Bengal Nagpur Railway.

(1) The two main routes of the Great Indian Peninsula Railway between Bombay and Calcutta, *viâ* Jubbulpur, and Nagpur, run through the eastern and northern districts of the provinces: and the same administration has an important link in the trunk railway route between Delhi and the south of India which has a somewhat tortuous alignment through the hilly country between Itarsi and Nagpur. Trains following this route thence use the main line as far west as Wardha junction where they turn south to Balharshah on the borders of His Exalted Highness the Nizam's dominions. Here the Great Indian Peninsula line meets the Nizam's State Railway.

Besides these broad gauge lines the Great Indian Peninsula operates on behalf of Messrs. Killick Nixon & Company, the Managing Agents, a system of feeder lines of 2′ 6″ gauge, known as the Central Provinces Light Railways. These branches run between the following points:—

From	To	Mileage.
Murtizapur . .	Ellichpura	48
„ . .	Yeotmal	70
Pulgaon . .	Arvi	22
		140

Another 2′ 6″ branch 43 miles in length recently opened, and forming an integral part of the Great Indian Peninsula system, runs between Darwa and Pusad.

(2) The main line of the Bengal Nagpur Railway from Calcutta serves the east of the provinces and forms with the Great Indian Peninsula the Nagpur trunk route between Calcutta and Bombay. Two important branches take off this line: one runs north westerly from Bilaspur to Katni in the extreme north of the provinces; the other joins Raipur with Vizianagram in the north of the Madras Presidency, its object being to provide the Central Provinces with an outlet for produce at the new harbour now under construction at Vizagapatam.

The Bengal Nagpur Railway has an extensive system of 2′ 6″ gauge feeder lines in the Central Provinces known as the Satpura Railway. The system is an integral part of the Bengal-Nagpur

Railway, and with its main line and branches runs between the following points:—

	Miles.
Jubbulpore to Gondia	141
Gondia to Chanda Fort	150
Nainruk to Parasia	110
Chanda Fort to Chindwara *viâ* Nagpur . . .	157
Branches	67
	625

Another 2′ 6″ branch takes off the main line at Raipur and serves Dhamtari and Rajim. Its length is 58 miles. A short 2′ 0″ gauge line of 19 miles connects Timsar Road with Tirodi. Thus the Bengal Nagpur Railway has in all over 700 miles of narrow gauge railway in the Central Provinces.

11. *Metalled roads parallel with Railways.*—Altogether the province is served by some 2,556 miles of railway, and about 67 per cent. of this has a metalled road generally parallel and within 10 miles of it. The distribution of the railway milage by Railway administrations and gauges, and the metalled road milage parallel is as follows:—

	Broad Gauge.			Metre Gauge.			Narrow Gauge.		
	Miles of		Percentage of railway paralleled.	Miles of		Percentage of railway paralleled.	Miles of		Percentage of railway paralleled.
	Railway.	Parallel road.		Railway.	Parallel road.		Railway.	Parallel road.	
G. I. P. . . .	939	695	74	..	..	..	183	157	86
B. N. R. . .	694	328	47	..	..	..	702	461	6
B, B. & C. I. . .	..	..	..	38	38	100	..	..	..
Total .	1,633	1,023	62	38	38	100	885	618	70

Good foundations and a plentiful supply of road metal provides the Central Provinces with well surfaced roads and the high percentage of such roads parallel with railways gives wide scope for bus competition. This is particularly felt by the narrow gauge feeder lines in the provinces, 70 per cent. of which have parallel metalled roads; and the narrow gauge trains cannot, for various reasons, successfully compete with the new form of transport. We deal with this further in paragraphs 25 to 28 below.

As regards future road construction the local Government in its evidence to the Jayaker Committee retained to itself the right of constructing any roads which it considered of benefit to the provinces irrespective of the effect on railways.*

* Indian Road Development Committee, 1927-28, Evidence, Volume I. page 210.

A.—Great Indian Peninsula Railway.

12. *Competitive Bus Services.*—The Great Indian Peninsula Railway reports that there are at least 670 buses running services in competition with the railway or short circuiting it in the area served by it, and of these 222 ply in the Central Provinces. We give below a list of the parallel services in the provinces (as distinct from short circuiting) competing with the broad gauge and the narrow gauge separately.

Bus services on roads parallel with sections of the Great Indian Peninsula Railway.

	Distance miles.	No. of buses.
(i) *Broad Gauge.*		
1. Badnera-Amraoti	6	15
2. Wardha-Hinganghat	21	7
3. Warora-Wun	16	2
4. Wardha-Paunar	5	6
5. Nagpur-Katol	37	4
6. Multapi-Betul	28	2
7. Itarsi-Betul	65	3
8. Damoh-Saugor	46	6
9. Jubbulpore-Katni	58	6
10. Jubbulpore-Shahpura	19	2
11. Narsingpur-Kareli	10	2
12 Khandwa-Harsud	38	1
13. Harda-Timarni	11	1
(ii) *Narrow Gauge.*		
14. Murtazpur-Banosa	14	1
15. Ellichpur-Anjangaon	17	20
16. Murtazapur-Karanja	21	7
17. Dharwa-Moti Bagh-Karanja	26	5
18. Dharwa-Moti Yeotmal	25	8
19. Pulgaon-Arvi	23	9

It will be seen that none of these are long range services except Itarsi-Betul, 65 miles, and Jubbulpore-Katni, 58.

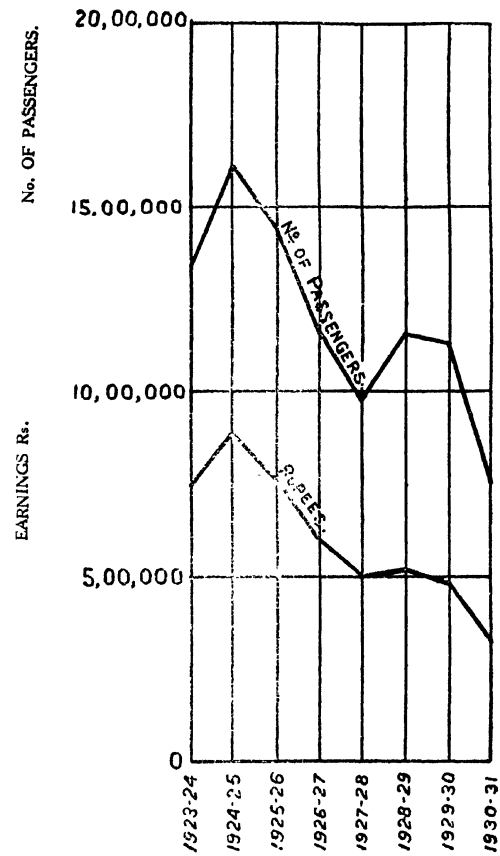
13. *Effect of Bus Competition on Central Provinces Light Railways.*—The Great Indian Peninsula Railway reports that the effect of bus competition has been particularly severely felt on the Central Provinces Light Railways. The following table gives the number of passengers and the earnings therefrom on these lines from the year 1923-24 to 1930-31 inclusive, and these figures are plotted on the graph opposite:—

	No. of passengers.	Earnings. Rs.
1923-24	1,335,000	7,38,000
1924-25	1,608,000	8,85,000
1925-26	1,450,000	7,63,000

CENTRAL PROVINCES LIGHT RYS.

TABLE SHOWING Nº OF PASSENGERS AND

THE EARNINGS FROM THE YEAR 1923-24 TO 1930-31 INCLUSIVE



	No. of passengers.	Earnings.
		Rs.
1926-27	1,151,000	5,96,000
1927-28	978,000	5,07,000
1928-29	1,152,000	5,10,000
1929-30	1,133,000	4,89,000
1930-31	733,000	3,22,000

It will be noticed that the number of passengers increased somewhat in the years 1928-29 and 1929-30, but that this increase was not accompanied by a corresponding increase in the earnings: in fact the earnings in 1929-30 were lower than in any previous year. The discrepancy between numbers and earnings may be attributed to a reduction in fares and to the issue of cheap return tickets.

In commenting on the above figure, the Great Indian Peninsula Railway point out that, in 1930-31, 717,000 fewer passengers travelled than in 1925-26, a decrease of 49 per cent. The year 1925-26 may be regarded as the last normal year prior to the advent of motor competition so far as the Central Provinces Railways are concerned. Comparative figures of passengers carried on the other sections of the Great Indian Peninsula Railway unaffected by motor competition during the last year prior to motor competition, and during 1930-31, show a decrease of 9 per cent., and this is presumably all due to trade depression. It is therefore argued that the 49 per cent. decrease in the case of the light railways is made up of 9 per cent. due to the general depression, and 40 per cent. due to motor competition, and the Railway claims that this is confirmed by checks which have been made from time to time of the number of passengers carried by the competing bus services. We were not furnished with details showing the result of such checks and are therefore not in a position to endorse the conclusions *in toto*, but it would appear that the effect of this competition on the Central Provinces Light Railways has at least been substantially greater than that of the depression, and we allude to this again in paragraph 16 below.

The Great Indian Peninsula Railway have not given us figures for 1931-32, but it is quite likely that these might show (as is apparent in some other provinces) that there was no increase of competition in that year, but were this the case, we think that it should rather be attributed to a general reduction of travelling than to any stabilisation of the situation. While in the Central Provinces, we found evidence of considerable unemployment among buses, and we think that when trade revives and the people have more money to spend on travel, buses may again be fully employed, and that to that extent competition may tend to increase.

14. *Effect of Road Development on Central Provinces Railways*, —We think, too, that as road development progresses in the areas served by the Central Provinces Railways, the effect of motor competition must increase. At present only one bus is reported as plying daily between Murtazapur and Banosa, but at the meeting we had at Amraoti, we were informed that one of the first needs of the

district was the construction of a metalled road between Anjangaon and Daryapur, and if this work were undertaken, there would be a continuous metalled road running parallel with the Central Provinces Light Railway for the whole distance between Yeotmal and Ellichpur, 118 miles. Moreover, the principal reason given for the urgent need of this road was the inadequacy of the train service on the light railway—an inadequacy, of course, emphasised by comparison with the bus services running alongside the rest of the railway. When the members of the District Council present at this meeting were asked whether they would view with complacency the ultimate closing of the railway owing to loss of traffic, the Chairman of the District Council replied that they would be quite prepared to see this take place in a few years time as the line not only gave a poor passenger service, but suffered from two other serious disadvantages in regard to the carriage of merchandise. These were as follows:—

(*a*) Being a 2′ 6″ gauge line, transhipment was involved at Murtazapur, and

(*b*) Being an isolated 2′ 6″ gauge system it did not possess sufficient rolling stock to handle spate traffic.

15. *Short circuiting bus services.*—The Great Indian Peninsula Railway reports that the following bus services are short circuiting the railway route between the points named:—

	Distance. By road.	Distance. By rail.	No. of buses.
1. Khamgaon-Nandura . .	11	16	10
2. Khamgaon-Shegaon . .	12	15	22
3. Wardha-Arvi	36	41	10
4. Dhamangaon-Yeotmal . .	29	124	14
5. Arvi-Amraoti	42	68	6
6. Ellichpur-Amraoti . . .	32	81	25
7. Nagpur-Pandhurna . .	56	65	6
8. Jubbulpore-Damoh . . .	66	86	20
9. Nagpur-Amraoti . . .	96	114	2

In certain of these cases the milage by railway in such that we think the railway cannot reasonably hope to compete with the buses, and in any case the railway is at a serious disadvantage when there is a junction involving a change of train and all the inconvenience of waiting for the connection. Routes Nos. 7 and 9 would, we think, be better described as *alternative* routes, rather than as short circuiting. In both cases the buses serve *en route* important villages which, but for the buses, would have no means of rapid transport and this is also true in the case of some of the other routes. But the fact remains that the railway is losing passenger traffic to these short circuiting services, and an estimate of these losses is included in the general estimate in the next paragraph.

16. *Estimated losses arising from bus competition.*—The Great Indian Peninsula Railway, like other administrations, emphasises the difficulty of framing any accurate estimate of the losses arising from motor bus competition, principally because of the severe trade depression which has supervened during the last two years. Moreover, bus services are difficult to check unless staff are placed on special duty for the purpose. The Railway has, however, organized a small special branch for dealing with the problem, and Mr. J. T. Day, who was deputed by the Great Indian Peninsula Railway to travel with us while we were in the area served by that system, has recently been entrusted with the special duty of investigating bus competition, and he has under him traffic canvassers and inspectors watching the competitive services.

The railway states that there are 670 competitive buses in operation in the area served by the system and calculates that approximately 4,370,400 passengers annually use these buses producing earnings amounting to Rs. 27,34,000. These figures are based on periodical checks. It is admitted that this money would not all have found its way into the railway revenue had there been no buses. Previously there was much short distance travel by country carts, ekkas, tongas, etc., and it is clear that buses have created a certain amount of new traffic. The railway considers that 25 per cent. might be deducted from the above figures on these counts, and that the balance, *viz.*, 3,277,800 passengers and Rs. 20,51,175 in earnings may possibly represent the present annual loss.

It is claimed that this figure is, to some extent, substantiated by the following other checks which have been made. Whereas on the Central Provinces Light Railways intensive motor competition made itself felt a year or two earlier, over the rest of the Great Indian Peninsula system its effects only began to be felt in the years succeeding 1927-28; accordingly the latter year is regarded as the last normal year on the Great Indian Peninsula system generally, prior both to trade depression and motor competition. Motor buses principally affect third class earnings and the numbers of third class passengers and earnings for the years 1927-28 and 1930-31 for the whole system are as follows:—

Great Indian Peninsula Railway. Numbers of third class passengers and earnings.

	Nos.	Rs.
1927-28	42,023,207	3,53,28,211
1930-31	34,952,109	2,85,82,699
Total decrease . . .	7,071,098	67,45,512
	or 16%	or 19%

The decreases combine, of course, the effects of trade depression with motor competition, and it is therefore necessary, if possible, to separate these. The Great Indian Peninsula Railway has attempted to do this by taking out comparative earnings for 1927-28 and 1930-31 on sections of the line unaffected by motor competition—a method which was also adopted by the North-Western Railway—and it has been found that on such sections the corresponding average decrease in numbers has been 9 per cent. and in earnings 13 per cent. It is therefore considered that the decrease of 16 per cent. in numbers above referred to is made up of 9 per cent. from trade depression and 7 per cent. from motor competition. Similarly the 19 per cent. drop in earnings is held to be made up of 13 per cent. from the depression and 6 per cent. from competition. Six per cent. of Rs. 35,33,28,211 is Rs. 21,19,692 which compares well with the figure of Rs. 20,51,175 arrived at by the method of checking the competitive buses, and the passengers they carry. We think that Rs. 20½ lakhs might be reasonably assumed as the present annual losses of the Great Indian Peninsula Railway owing to motor competition, and of this figure (which of course is for the whole Great Indian Peninsula system) the railway states that about Rs. 6¼ lakhs would represent the losses in the Central Provinces.

Incidentally we would point out that the Great Indian Peninsula methods of estimating the losses bring into strong relief the serious effects of motor competition on the Central Provinces Light Railways. There the competition was felt at least two years earlier, than over the rest of the system and has ultimately led to a far greater proportionate decrease in passenger numbers and earnings, as is shown by the following comparative percentages:—

Comparative percentage decreases.

	G. I. P. system as a whole.			C. P. Light Railway.	
	Nos.	Rs.		Nos.	Rs.
1930-31 on 1927-28	16%	19%	1930-31 on 1925-26	49%	57%

These figures include of course the effect of the general depression as well as of motor competition.

The decrease assumed by the Great Indian Peninsula as being due to trade depression amounts, as has been recorded above, to 9 per cent. in numbers and 13 per cent. in earnings, and if these percentages are assumed to apply also on the Central Provinces Railway, it would follow that the decrease in that case due to competition has been as much as 40 per cent. in numbers and 44 per cent. in earnings; and while such calculations must be treated with great reserve, nevertheless we think that the figures are significant as indicating that the light railways in the Central Provinces, being very susceptible to attack from the new form of transport, probably felt the competition first, and that competition has grown more intensive in

this area than elsewhere owing to the comparative inability of the light railways to meet it. In other parts of India also the first complaints in regard to motor competition were received from the light railways.*

17. *Steps taken by Great Indian Peninsula to meet competition.* —The Great Indian Peninsula Railway reports that the following measures have been taken to meet the competition:—

(*a*) *Revision of Time Tables.*—The timings of branch and feeder trains have, when possible, been re-arranged to meet the needs of short distance passengers; and leading commercial bodies in the large towns, and district officials at district headquarters are periodically consulted as to the convenience of the time tables. The speed of trains has, when possible, been increased, and additional steps have been given to express and mail trains to pick up and set down passengers in areas where competition is severe.

(*b*) *Intelligence services.*—As mentioned already the Railway has an officer in the Commercial Department whose duties include periodical surveys of motor bus operation, and under this officer are traffic canvassers and commercial Inspectors who watch bus services and report at what hours buses run with a full complement of passengers. If there is reasonable chance of an extra train paying, it is put on at these hours. A special Inspector has been put on to the Central Provinces area who not only watches the bus traffic but is able to bring irregularities to notice. Careful statistics of traffic are kept, sometimes from month to month between stations on sections affected by motor competition, and when decreases are noticed enquiries are instituted to see whether the competition can be met.

(*c*) *Reduction of fares.*—Fares have been reduced, cheap return tickets introduced, and third class tickets have been made available by mail and express trains. This has, with few exceptions, regained some of the lost traffic; in some cases it has not succeeded and the reductions have been withdrawn.

From the figures given in paragraph 13, of the earnings of the Central Provinces Railways, reduced fares do not appear to have met with general success on these lines.

(*d*) *The provision of halts.*—Halts have been opened or are under contemplation on the light railways.

(*e*) *Light Units.*—The Great Indian Peninsula Railway have tried four steam coaches on certain sections where there is keen motor competition, but these have not proved satisfactory. Sometimes it was found that, for the passengers offering, their seating capacity was insufficient, and they are incapable of hauling a trailer. We are informed that the limited seating capacity, combined with the

*As far back as August 1923 Messrs. Gillanders Arbuthnot endeavoured to obtain powers for the Darjeeling Himalayan Railway to operate motor services to resist road competition. Messrs. McLeod, Managing Agents of the Kalighat-Falta line, did the same in 1925

low third class fares, and the need of having a standby militates against the success of these coaches.

The problem of providing the light railways with a suitable self-propelled unit is still under consideration. What is required is a vehicle with limited axle load to permit of a high average speed—much higher than that permitted to the trains running over the light railways. The Great Indian Peninsula Railway is now in correspondence with its Consulting Engineers and has submitted alternative specifications for vehicles with a seating capacity of 25 and 50. It may be noted that the use of self-propelled vehicles is thus still very much in the experimental stage.

(*f*) *Co-ordination between road and rail services.*—This method has been adopted between certain out agencies served by Talegaon and Bombay and has been entirely successful in meeting the road competition. It has not so far been developed in the Central Provinces, where motor transport is not yet sufficiently organized in the hands of responsible companies. Its possibilities are, however, being investigated. We would commend the arrangement to other railways though we are aware of the difficulties of introducing it in areas where the small bus owner preponderates.

18. *Managing Agents of the Central Provinces Light Railways.*—As already stated the Great Indian Peninsula Railway works the Central Provinces Light Railways on behalf of Messrs. Killick Nixon, the Managing Agents, who are also the Managing Agents of several other light railways, and have their registered offices in Bombay. They have recently addressed the Great Indian Peninsula Railway on the subject of the declining earnings of the Central Provinces Railways, and they have further, on behalf of the light railways in India, addressed the Chief Commissioner of Railways, regarding the serious effect of motor competition on light railways in general. In view of this we arranged to meet the railway representatives of Messrs. Killick Nixon while we were in Bombay, and the views of that firm in regard to the problem we are investigating are recorded in our Bombay report.

B.—Bengal Nagpur Railway.

19. *Competitive Bus Services.*—The Bengal Nagpur Railway reports that the system has suffered more severely from motor competition in the Central Provinces than in any other area, and this, we think, is chiefly due to the extensive system of light railways owned by the administration in the Central Provinces and to the excellent roads parallel thereto. In all, the Bengal Nagpur Railway has some 700 miles of light railway in the Provinces—the greater portion forming the Satpura Railway, a network of light lines serving the areas in the neighbourhood of Nagpur, Gondia and Jubbulpore and consisting of over 600 route miles. It will be seen from the statement below that the greater number of bus services competing with the Bengal Nagpur Railway are on roads parallel

to the narrow gauge railways. The competitive services are as follows:—

Bus services on roads parallel with sections of the Bengal Nagpur Railway.

	Distance miles.	Total seating capacity of buses.
(i) *Broad Gauge.*		
1. Bilaspur-Raipur	69	44
2. Drug-Raipur	24	100
3. Bhatapara-Raipur	40	64
4. Kamptee—		
Nagpur	9	544
Itwari	7	
Dumrikhurd	10	
Ramtek	17	
5. Gondia-Bhandara Road	50	40
6. Raipur-Tilda	24	100
7. Raipur-Arangmahanadi	23	92
(ii) *Narrow Gauge.*		
8. Nagpur-Khapa	31	232
9. Pauni Road-Nagpur	54	176
10. Sausar-Nagpur	49	343
11. Nagpur-Chhindwara	92	130
12. Chhindwara-Seoni	41	112
13. Chhindwara-Parasia	18	172
14. Balaghat-Waraseoni	12	5
15. Balaghat-Gondia	26	80
16. Jubbulpur-Gowarighat	6	96
17. Chanda Fort-Mulmaroda	28	64
18. Raipur-Rajim	28	5
19. Raipur-Dhamtari	46	336

An examination of this list shows that on the broad gauge sections the most serious competition is in the neighbourhood of Nagpur and Kamptee. In fact according to the calculations of the Bengal Nagpur Railway, the line suffers a greater loss in the aggregate from these short services than from any other buses. This is what might be expected, as these four short services in the neighbourhood of two large populous centres are just those which motor buses can perform so well—services which, we feel, cannot so suitably be met by the railway which can only provide a comparatively few trains running at irregular intervals and involving the need of a journey to and from the station at each end.

Apart from the Kamptee Nagpur competitive bus service, by far the greatest loss suffered by the Bengal Nagpur Railway is in connection with its narrow gauge lines. Good metalled roads run alongside these for almost the whole of their length and

there can be little doubt that the coming of the motor bus has rendered the public less satisfied with the train services on the light railways.

It may be noted that some of the competitive bus services have a comparatively long range, the distance between Nagpur and Chhindwara being as much as 92 miles.

20. *Short circuiting bus services.*—The Bengal Nagpur Railway reports the following three short circuiting services in the Central Provinces. The railway and road milage is given in each case and it is obvious that the railway, which is narrow gauge in each case, cannot possibly hope to compete with the buses:—

	Distance		Seating capacity of buses.
	Rail.	Road.	
Nagpur-Seoni	132	80	128
Jubbulpur-Mandla Fort . .	95	60	196
Jubbulpur-Seoni . . .	116	86	32

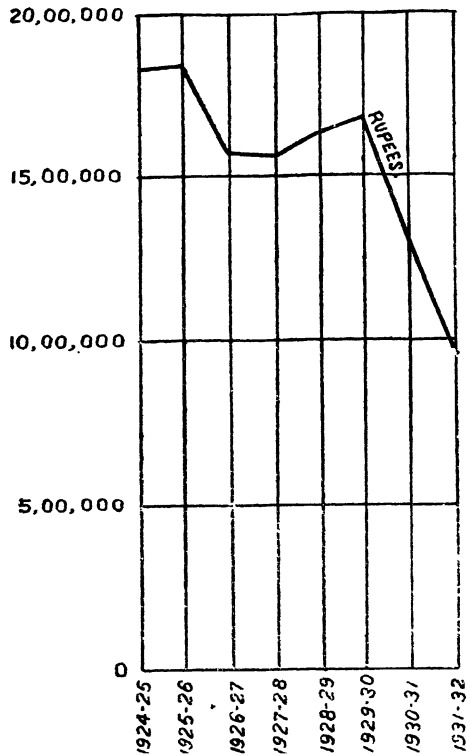
All these are long range services.

21. *Estimated losses arising from bus competition.*—The Bengal Nagpur Railway has attempted to estimate the losses being inflicted on it by motor competition, on the following basis:—

Competitive passenger milage has been computed on the basis of the actual railway milage and the total seating capacity of the competitive buses; on a route of less than 10 miles it has been assumed that a bus runs three round trips daily: on routes from 10 to 20 miles, two round trips; and on routes over 20 miles, one round trip. It has further been assumed that the buses only run 300 days in the year. The annual losses due both to parallel and short circuiting bus services, are on this basis estimated at nearly Rs. 16 lakhs, but we feel that this is an over estimate in view of the widespread unemployment, which we understand now prevails among buses in the Central Provinces. In one district we were informed that buses, on an average, only got a trip on the road every alternate day; and on one route at the time of our visit (it was in the area served by the Great Indian Peninsula Railway) buses were only getting a trip once in four days. Owing to the varying conditions prevailing in different parts of the province and the limited time at our disposal, we had no means of framing an alternative estimate based on more certain data than those given us by the Bengal Nagpur Railway; but we think it might be reasonable to assume as an approximation that half the buses operating on competitive routes run for the whole year instead of 300 days, and this assumption would place the estimated annual loss to the railway at about Rs. 9 lakhs. In suggesting this reduction in the estimate it must not be supposed that we desire to minimize the effects of the competition which, as we shall show presently, are serious, certainly

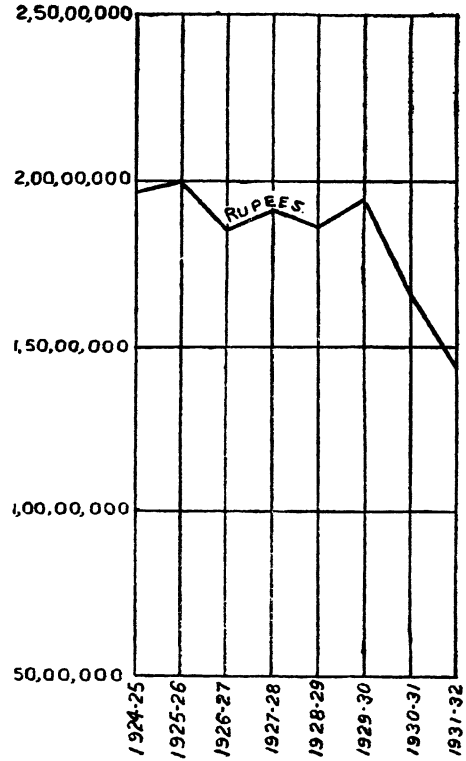
SATPURA RAILWAY.

TABLE SHOWING THE PASSENGER EARNINGS FROM 1924-25 TO 1931-32.



B. N. RAILWAY.

TABLE SHOWING 3RD CLASS EARNINGS FROM 1924-25 TO 1931-32.



on the Satpura Railway. Nor should it be overlooked that, when once trade revives, there is every probability that the buses, now only partly employed, will then come into fuller use to the extent that traffic offers.

22. *Decrease in passenger earnings, Satpura Railway.*—We give below the passenger earnings of the Satpura Railway from the year 1924-25 to 1931-32. The figures are also plotted on the graph opposite.

	Rs.
1924-25	18,29,538
1925-26	18,45,926
1926-27	15,71,891
1927-28	15,62,451
1928-29	16,33,050
1929-30	16,77,248
1930-31	13,11,417
1931-32	9,61,704
1932-33 (April to July)	3,48,926

These figures show that passenger earnings increased slightly in 1925-26, but that next year there was a sudden drop of nearly Rs. $2\frac{3}{4}$ lakhs or over 14 per cent. This, we think, may have been largely due to motor competition, because the present trade depression did not set in till some years later. Earnings recovered somewhat in the years 1928-29 and 1929-30, but there again occurred serious decreases amounting to no less than Rs. 6 lakhs during the next two years. In these years, of course, trade depression aggravated the effects of motor competition, and a comparison of the earnings of 1931-32 with those 1925-26 shows a decrease of almost Rs. 9 lakhs or nearly 48 per cent., as compared with the 57 per cent. decrease in the case of the Central Provinces Light Railways given in paragraph 13 above. Third class earnings on the Bengal Nagpur Railway *as a whole* were fairly well maintained until the year 1929-30 as the following figures and the graph opposite show:—

	Rs.
1924-25	1,96,91,048
1925-26	1,99,79,000
1926-27	1,84,21,000
1927-28	1,90,88,000
1928-29	1,86,80,000
1929-30	1,93,73,748
1930-31	1,66,50,837
1931-32	1,43,42,511

Considerable decreases took place in 1930-31 and 1931-32 and the figures of the latter year compared with the 1925-26 peak, show a decrease of 28 per cent., as compared with nearly 48 per cent. on the Satpura Railway alone. Both decreases include the effects

both of trade depression and motor competition; but we think that the above comparison reveals the same characteristic as that which we have already noticed in respect of the Central Provinces Light Railways and that, as might have been expected, it is the light railway portion of the Bengal Nagpur Railway system that has suffered most from motor competition.

23. *Steps taken by Bengal Nagpur Railway to meet competition.*—The Bengal Nagpur Railway has endeavoured to meet bus competition by introducing cheap return day tickets on Bazar days and two to three days return tickets at cheap fares—$1\frac{1}{4}$ of a single fare—on the Satpura Railway. Attempts have also been made to run steam coaches or light trains at more frequent intervals, but it is reported that these have not been successful, owing to the speed restrictions which, on some sections of the line are as low as 15 miles an hour.

24. *Goods traffic by motor transport.*—The Bengal Nagpur Railway informed us that at present practically no goods traffic is being carried by competitive motor transport; but the railway points out that the local Government, in pursuance of its recent policy of encouraging motor passenger vehicles many of which run in competition to the railway, has now announced to the Secretary of the Central Provinces and Berar Motor Drivers' Association its intention of allowing the issue of licenses for the carriage of luggage and goods in motor buses.

In passing we may note that the goods earnings of the Satpura Railway have also suffered serious decreases in the last two years, which must be due entirely to trade depression. If Government freely permit licenses to be issued for motor buses to carry goods traffic, it is probable, as has happened in other provinces, that buses now unemployed will carry merchandize and possibly at uneconomic rates, which will still more adversely affect the light railway.

C.—Position of Light Railways generally in the Central Provinces.

25. *Limitations of single narrow gauge lines.*—The problem of the future of light railways is perhaps brought into stronger relief in the Central Provinces than elsewhere in India, inasmuch as the Central Provinces have probably, for their area, a greater milage of such railways than any other province, the Great Indian Peninsula and Bengal Nagpur Railways between them operating nearly 900 miles. The major part of the Bengal Nagpur Lines is the Satpura Railway, a large connected system of 625 miles, with leads as much as 140 to 150 miles. Good roads running for the most part alongside these lines have naturally induced intense bus competition and emphasized the short-comings

of the narrow gauge railways which, we consider, may be summed up as follows:—

(*a*) Limited speed.

(*b*) Want of flexibility.

(*c*) Inability to provide door-to-door service, and

(*d*) Other miscellaneous disadvantages to the public.

We propose to deal with each of these in turn.

26. *Limited speed.*—Speed on narrow gauge lines is limited by several considerations. It may be that the rail used is of light section or that the line is only ballasted up to a certain restricted standard. Again, a light railway is usually an inexpensive surface line and in hilly country may therefore abound in grades and curves; and this is particularly the case in the Satpura district. At crossing stations, moreover, the speed of trains is limited to 10 miles an hour over hand-locked facing points; narrow gauge railways being usually equipped with the simplest form of signalling. On a single line, trains are frequently delayed at stations waiting for crossing trains. With such obstacles to quick service, it is not surprising that the overall speed is only about 15 to 20 miles an hour.

While in the Central Provinces, we had the opportunity of seeing the effect of a speedy bus service on the Bengal Nagpur narrow gauge section between Nagpur and Saoner. We met on this route a light train proceeding to Nagpur which we were informed would accommodate eighty passengers, and was actually carrying five. The train was timed to leave Saoner at 8-30 in the morning and due to arrive at Nagpur at 10-07—1 hour 37 minutes for 28 miles. The Station Master, Saoner, informed us that buses from Saoner to Nagpur took about three-quarters of an hour for the journey by road.

27. *Want of flexibility.*—Trains on a single line, especially on a narrow gauge line, with few crossing stations, can naturally not provide as flexible a service as a number of buses running on a road. The timings of the trains, with the crossing stations not only situated at some distance apart but at irregular intervals, must be irregular. Thus, while the trains on a single line railway can each carry a comparatively large number of passengers at infrequent irregular intervals, they cannot provide a half-hourly or even an hourly service between two towns for 20 or 30 passengers at a time, as can a properly organized line of buses.

Moreover, the railway has another limitation. Even if attempts are made to meet the speed of buses by running a self-propelled unit, with which experiments are being made by certain lines, it may often happen that this unit has not sufficient capacity for all the passengers offering. In the case of a bus service this difficulty would probably be met by overcrowding or by starting another bus, but on the railway many of the passengers offering

in excess of the carrying capacity of the self-propelled unit would almost certainly be left behind and might have to wait some hours for another train.

In this connection we would mention that we were furnished by the Bengal Nagpur Railway with a note on motor competition compiled by the District Traffic Superintendent in charge of the Satpura Railway. This officer, recognising the lack of flexibility in the train service now provided on these lines, suggests that goods traffic should be cleared at night, and that, during day light, rail motor vehicles should be run over various sections of the railway, as often as possible. He states that passenger traffic on these lines is usually for short distances only and he accordingly divides the line into short sections over each of which he proposes to run, as frequently as possible, one rail motor. As only one motor would be in a section at a time, no line clear work would be necessary, and delays arising from crossings would therefore be avoided. This officer has obviously given much thought to the subject, and himself admits that there are objections and difficulties in the way of his proposals. We consider that the principal difficulties are:

(1) The fact that any self-propelled rail motor has limited accommodation, and that passengers in excess of this may often offer. To meet this difficulty the District Traffic Superintendent suggests that two or three such vehicles should be allowed to run on "following line clear", but if this were done, there is the danger that the capacity of the single line would be seriously reduced, and that the frequency of service so essential to the needs of the public could not be obtained.

(2) The other objection appears to us to be that even if one rail motor plys over the sections as suggested, it cannot give a frequent service. On one such section for instance of 25 miles, it is estimated that a round trip of the rail motor might take 3 hours. It would thus appear that if a passenger missed the first rail motor, he would have to wait for over 3 hours before the next started, and this delay would of course be lengthened on busy days if two or three rail motors were allowed to run on following line clear as has been suggested.

28. *Inability to provide door-to-door service.*—This drawback to the railway is not of course peculiar to narrow gauge lines. It is, however, an exceedingly important consideration, having a large bearing on the question of motor competition. The District Traffic Superintendent in his notes gives an example which we may quote here, if only to show that the convenience of the bus service is sometimes such that it will over-ride the cheaper fare charged by the railway.

"To take for example, a family of five of which three are young children going from Umrer to Nagpur (25 miles).

They have to get up very early, walk or drive to the station, a distance of one to two miles, unload their luggage from the cart, wait at the station, load it in the train when it comes in, and then go through the reverse process on arrival at Nagpur station. How much more simple it is for them to get into the bus at their very door and disembark in the middle of the Nagpur bazar? Incidentally at present the bus trip is from 9 to 10-30 hours, while the train is from 7-34 to 11-5. I have recommended the speeding up of this train from 8-24 to 10-49. The fares are—Bus, As. 12; railway, As. 10-3.'

29. *Other miscellaneous disadvantages to the public.*—Under this heading the District Traffic Superintendent points out that there is less formality attendant on a journey by bus than a journey by train. Once the bus fare is paid, the passenger takes his seat and is not asked to show his ticket during the journey, nor is his ticket collected at the end. It is possible that this may not be regarded as very important, but we feel that it is so to the Indian peasant to whom a journey by train with its attendant formalities and the possible incivility of subordinate officials, may be a serious enterprise not to be lightly undertaken. We have, again and again, during our tour had this point placed before us, to such an extent that we think that it cannot be dismissed as trivial. It is, in fact, of great psychological importance and we think that it cannot be too often impressed upon the subordinate railway officials that incivility is the worst salesmanship and that a proper demeanour to the public of all ranks is essential.

30. *Operation of road motor services by railways.*—The problem of motor competition with light railways is, as has been sufficiently demonstrated, outstanding in the Central Provinces, and it is therefore significant that we should have received, during our visit to the Central Provinces, some considered opinion in favour of railways themselves operating motor bus services on parallel roads. At the meeting we held at Amraoti, we were informed that the District Council would be in favour of this, one of the reasons given being that the motor buses in the district provide the public with a very bad service. It was felt that, if the railway were permitted to run bus services on roads parallel with the narrow gauge sections, the public would be better served in every way.

At the same meeting there was a strong consensus of opinion that the railway should be allowed to operate bus services on the road between Amraoti and Dhamangaon as soon as the road now under construction between Chandor and Dhamangaon is completed. The road from Chandor to Dhamangaon is closely parallel with the Great Indian Peninsula Railway and the rest of the road route forms a short circuit to the railway between Chandor and Amraoti.

The operation of road motor transport by railways is a large question involving many important issues, and we hope to deal with it fully in the general part of our report.

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION AND THE PRESENT CONDITION OF MOTOR TRANSPORT BUSINESS.

31. *Number of Vehicles.*—At the end of the year 1931 there were the following motor vehicles registered in the Central Provinces:—

Motor cycles	523
Motor cars	2,685
Taxis, lorries and buses	1,782

The figures available at headquarters do not readily show the number of taxis, lorries, or buses separately, but it is probable that there are not in the whole of the Central Provinces and Berar more than about 100 purely goods lorries most of which are employed industrially in towns. There are also stated to be very few taxis so that there may be said to be between 1,000 and 1,500 motor buses. These are generally lighter and of lower capacity than is the case in other parts of India. Mr. Middleton-Stewart, Deputy Inspector General of Police, who has had a great deal to do with the control of motor transport, is of the opinion that the average seating capacity of motor buses is about 16 as against the 20 to 23 seater 1½ ton capacity vehicle which is most common elsewhere. In the Central Provinces and Berar the buses appear to be mostly of 15 cwt. or 20 cwt. chassis and even where 30 cwt. chassis are employed, the seating capacity does not usually exceed 20. As regards the fares charged by these buses, it appears that competition between the buses themselves is so acute that there is little difference between the fare charged on routes competitive with railways and those on non-competitive routes. Having regard to the average capacity of the buses, the fares charged are remarkably low and appear to be generally between three and five pies per passenger mile. Taking 4 pies as the average and assuming that a 16 seater bus runs at 75 per cent. full load for every trip it does, carrying that is to say 12 passengers, the earnings will amount to only 4 as. per mile and we doubt whether, if proper allowance is made for depreciation and interest even with the relatively low provincial tax in the Central Provinces and Berar, such a bus can be operated at a profit for less than about 5 annas a mile. It appears that, owing to intense competition, buses are now operating below the economic level.

32. *Buses unemployed and losing money.*—From statements made to us in the course of our discussions with various authorities and from our own enquiries, it seems that the present financial depression, coming upon the heels of a boom in the sales of motor buses stimulated by attractive hire purchase terms and encouraged by the apparent prosperity of the business, has resulted in a large

surplus of buses over requirements, which has in turn led to such acute competition that, as a general rule, the bus owners who are either owner drivers or men in a very small way have formed themselves into unions and have arranged a roster as is the case elsewhere. At the time we visited the Central Provinces and Berar, at a slack season, it appeared that in quite a number of cases a bus might only get a turn on the road every 2, 3 or 4 days, a larger number of turns being probable on the shorter routes and a smaller number on the longer routes. At Thalaigaon for instance a place 61 miles from Nagpur and 35 from Amraoti, a small bus centre at four cross roads, we found about half a dozen buses at the road side one of which was loading up for Nagpur at about 10 A.M. With the exception of the mail, no bus had left that morning in the direction of Nagpur, but we were told by the various owners and drivers present that the bus which was loading up and had then only two passengers, would, by arrangement among the owners, not leave the stand until five or six rupees worth of fares had got on board (the fare to Nagpur, 61 miles, being Re. 1 or 3·15 pies per passenger mile), but he might have to wait another 2 or 3 hours until the necessary complement of passengers was made up. This particular bus had arrived from Nagpur 4 days previously and after standing on the road side at Thalaigaon for 3 days was now getting a trip on which the takings, if a reasonable number of passengers offered themselves at intermediate stages on the journey, might amount to eight or ten rupees. Thus on this particular route the takings of bus might amount to Rs. 20 a week for journeys of 120 miles. The out of pocket expenses would be, say,

	Rs.
8 gallons of petrol	13
And the best part of a gallon of lubricating oil, say .	4
Total .	17

the balance of Rs. 3 being required to keep the driver and the cleaner for a week, clearly leaves nothing for repairs and replacement of tyres and depreciation. Indeed, assuming that such a bus would be operated for five annas a mile which is possibly a low figure having regard to the small milage, the commercial cost of operating would for 120 miles amount to Rs. 37-8-0 against the actual takings of Rs. 20. It was admitted by all with whom we conversed at Thalaigaon, however, that the season was at its slackest, but it was alleged that, even when more traffic was moving, it was improbable that a bus would get more than four 60 mile trips in a week.

33. *Official action to reduce surplus buses on different routes and acute competition.*—This condition is prevalent in certain provinces but is not so marked in others. As to whether it is

in the long run, in the public interest that a succession of optimists should continue to lose their money by embarking upon the business of carrying passengers in circumstances in which it is impossible for them to obtain a reasonable return on their outlay, is a general question to which we shall have occasion to refer in the summary of our report on all provinces, but we would here place on record the impression that, whereas in other Provinces there is considerable opinion in favour of limiting the number of buses plying for hire on any route so as to prevent uneconomic competition, in the Central Provinces and Berar our impression is that opinion rather favours free competition being allowed to take its course and provide its own cure which it is considered it will ultimately do. In addition, certain practical difficulties in the way of any limitation of the number of motor buses on any route were stressed. The first is that of deciding to whom, among a large number of applicants, a limited number of permits or licenses to ply for hire should be issued. A practical solution suggested was by method of auction, and as it would be clearly impossible to operate a satisfactory service without security for a reasonable period, at least for the life of a vehicle, annual auctions would probably be out of the question. Thus it might be necessary to auction the permits for a route for a period of three or more years and this would inevitably lead to virtually closed monopolies to which there are various objections. Another obvious difficulty is that a considerable amount of elasticity is necessary in the number of buses allocated to any route. Bus traffic is subject not only to seasonal variations but also to very considerable normal variations within even one week, owing to the incidence of market days in different towns on different days of the week. It is clear that this question is by no means as simple as might appear at first sight and is one to which very considerable thought would have to be given before a satisfactory arrangement could be made.

34. *Motor vehicle taxation.*—We attach at Appendix 2, a schedule of the provincial tax levied on motor vehicles, from which it will be seen that taxation is relatively low, a 16 seater motor bus being required to pay Rs. 160 per annum. In addition to the above there is a small municipal wheel tax which is levied by the municipality of the town in which the motor bus is registered. No municipal tax is leviable upon a vehicle which enters municipal limits if registered elsewhere; nor are there any fees for the use of bus stands.

35. *Motor vehicle regulations.*—In every province which we have visited we have endeavoured to elicit public opinion as to whether any further restrictions or regulations regarding public service vehicles are necessary in order to provide a better standard of service for the public. In the Central Provinces and Berar the general consensus of opinion appears to be that on the whole the standard of service afforded to the public is at present reasonably satisfactory, Amraoti district being an exception and that

motor vehicles are on the whole maintained in adequate condition. (This was confirmed by our personal observations). There was, however, some volume of opinion in favour of the drawing up of time-tables for bus services and of arrangements for enforcing them and placing upon the bus owners the obligation to run vehicles according to time-tables and not merely adventitiously as passengers offered. For the rest, the general opinion appeared to be that the existing regulations were generally adequate, but that they might with advantage be extended in one or two directions and be more strictly enforced. This would however require strengthening of the police.

36. *Speed governors.*—In Berar we were informed that all motor buses are fitted with speed governors and that on the whole these are working very satisfactorily. It is, however, generally conceded that the type of governor at present fitted, while efficient if allowed to operate, cannot be so sealed as to preclude its being tampered with and put out of action. Despite this difficulty, however, it was stated that in Berar there could be no question but that the introduction of governors had had a salutary effect upon the general level of speed which was now much lower and more reasonable than before, although offences against speed regulation are not by any means unknown.

37. *Accidents and insurance of passenger risk.*—The general impression we gathered was that since the formation of unions of bus owners and the elimination of direct competition by the system of rosters, accidents which were previously frequently caused by buses racing and jockeying for position have become much less frequent. Nevertheless there is a body of opinion in favour of compulsory insurance against claims from passengers in respect of injury or death, and this is a question which would have to be taken up with the insurance offices.

CHAPTER V.—BRANCH LINE PROJECTS.

38. We have been asked to examine, in conjunction with the local authorities and railway administrations, each railway project which has been in contemplation during the last few years with a view to ascertaining whether new or improved roads would not serve the area better. Below we give brief comments on the railway projects contemplated by the Great Indian Peninsula and Bengal Nagpur Railways in the Central Provinces.

A.—Great Indian Peninsula Railway.

(1) *Khamgaon-Chikli Railway, 38½ miles, 5'—6" gauge.*—This line is a prolongation of the branch line joining Khamgaon with Jalamb junction. It has been considered justifiable financially in spite of the road system in the neighbourhood, and its construction has actually been sanctioned by the Railway Board. The work has not been started owing to lack of funds; but in view of motor transport development, this project might, we think, be reconsidered.

(2) *Amraoti-Narkhed Railway, 79 miles, 5'—6" gauge.*—The area served by this line is already provided with good roads over which bus services ply. The passenger traffic on the railway, if opened, will therefore be affected by motor competition. As regards goods earnings, while it is true that the projected line will pass through a very fertile area, it was said by the Commissioner of the Amraoti Division that the construction of the railway itself would not bring one additional acre under cultivation as all land in the neighbourhood is already under crops, the produce of which finds its way to the existing railways. We consider that this is a case where improvement of roads would probably serve the neighbourhood adequately.

(3) *Hiwarkhed-Akot-Akola-Basim Railway, 91 miles, 5'—6" gauge.*—The places to be served by this railway are already connected by good roads and accordingly the question of a road in lieu of the proposed line does not arise. The object of this line is not so much to serve local needs as ultimately to provide a through north to south connection.

At a meeting held at Akola at which a number of prominent people representing many interests and localities in the Akola and neighbouring districts were present, we learnt that there was considerable local demand for the construction of this line—a demand which was supported by the Deputy Commissioner of Akola.

(4) *Dhamangaon-Yeotmal Railway, 34 miles, 2'—6" gauge.*—A good metalled road already exists between these two points and over it a considerable service of buses is already running. (See para. 15 above.)

(5) *Borkhedi-Hinganghat Railway, 26 miles, 5'—6" gauge.*— The object of this line is to shorten the north to south route between Delhi and Madras. If constructed it would avoid the change of direction Grand Trunk Expresses now suffer at Wardha Junction. The replacement of this proposal by a road does not therefore arise.

(6) *Nagpur-Jubbulpur Railway, 150 miles, 5'—6" gauge.*— This project has not been surveyed. Its object is to connect by direct railway the two most important cities in the province. The Great Northern Trunk road, however, already joins Nagpur with Jubbulpur.

B.—Bengal Nagpur Railway.

39. The Bengal Nagpur Railway have only two projects in the Central Provinces; one is for a line between Jagdalpur and Dumermura *viâ* Jeypore, a trunk route of 161 miles of broad gauge affecting not only the Central Provinces and Bihar and Orissa but Madras as well. This project is of such a nature that a road would obviously not serve the purpose.

The other project is for a 2'—6" gauge line from Dhamtari to Kanker, 44 miles. There is already a metalled road in existence for part of the distance and we would suggest that the improvement and extension of this road would in all probability serve the needs of the area. The experience with 2'—6" gauge lines in recent years, especially where good roads run parallel with them, should be sufficient to show that they cannot adequately meet the growing needs of passenger traffic, and that their sole justification would have to be the carriage of heavy minerals and other bulk traffic of which we understand there is no great quantity exportable from the area to be served by the proposed line.

CHAPTER VI.—PROGRAMME OF ROAD DEVELOPMENT.

40. *Description of Programme.*—There is a large programme both for general road development and for the provision of certain bridges, the more urgent items in which we reproduce in the statement at Appendix 3. From this it will be seen that the total cost of the urgent items in the road programme is estimated to be Rs. 2,37,87,000 and for bridges Rs. 30,89,600 or a total of Rs. 2,68,76,600. These programmes have been systematically drawn up as follows: In 1927 the local Government addressed all Commissioners stating that the development of communications on a reconsidered and up-to-date programme for all districts was a matter which should receive early and thoughtful consideration and that programmes might be drawn up after consultation with District Councils. The local Government accordingly directed that District Road Scheme Conferences should be held in each district followed by Divisional Conferences. This was accordingly done and the District Conferences drew up programmes of necessary works in order of urgency for each district these being then arranged by Divisional Conferences in a divisional order of urgency. These programmes have been kept up to date from time to time and the statement which we now reproduce represents, we understand the works which would be undertaken as soon as funds were available although possibly one or two of them may previously be carried out from the provincial share in the road development account.

41. *Constitution of road conferences.*—The constitution of the District Committees was as follows:—

President	Deputy Commissioner of the district.
Member	The Chairman, or other representative of the District Council.
Members	One member from each of the Local Boards in the district.
	One member from the Market Committee or other important trade organisation in the district.
Member	District Engineer, District Council.
Secretary	Executive Engineer in charge of Public Works Department in the district.

and of Divisional Conferences as follows:—

President	(1) Commissioner of the Division

Members	(2) The Chairman, or other representative of each of the District Councils in the division.
	(3) Superintending Engineer of the Circle.

The duties of Divisional Conferences were to collate the material of the District Conferences, to deal with through communications as a whole for the division, and to lay down a divisional order of urgency, for the works recommended by the various District Conferences. It will be seen that representation of the railways was not specifically provided for in the constitution of these Conferences, but in the case of Berar, where the road programme appeared likely to be affected by the recent construction of certain railways or by certain projected railways, a railway representative was invited to the Divisional Conference.

42. *Effect of proposed road development programmes on railways.*—We discussed each item of the programme with the officer deputed by the local Government to co-operate with us and examined the possible effect of these upon various railways concerned. It is clear that a programme which has been so comprehensively drawn up is not one upon which we can venture to comment except in respect of the broad issues with which we are concerned. From that view point the programme taken as a whole appears to be extremely well distributed and to provide for rural road development to an extent which cannot fail to be of benefit to the railway as well as to the province as a whole. At the same time it is perhaps natural that in a programme of this magnitude there should be a number of schemes which might individually damage railway interests and we have in producing the programme in the Appendix printed a certain number of projects in italics as being those upon which we consider that the railway administration concerned should be afforded an opportunity of stating its possible objections before the scheme is actually taken in hand. We would urge the most careful consideration of the representations of the railways concerned because of the 2,500 miles of railways in the Central Provinces and Berar 1,680 miles or 63 per cent. already suffer from competitive roads, and the light railways in particular are already badly hit by motor transport.

43. *Local Road Development.*—The programme is, as we have said, comprehensive and well distributed; it is, however, generally of the nature of development from the trunks outwards. We are aware that our hurried superficial inquiry does not entitle us to venture any criticism of this policy, but our general impression here and elsewhere is that sooner or later, if the road system is to develop its full value, concerted effort will have to be directed to the stimulation of development from the other end, that is from the village towards the public road. A comprehensive plan therefore might with advantage include some provision for this if only for purposes of demonstration of the possibilities in selected areas. We are of course fully alive to the soil and rainfall conditions in

the Central Provinces and to the difficulties that these present in the way of earth road development, but perhaps these difficulties are, if anything, merely stronger reasons why the financial and professional resources of the province should be directed to their solution.

44. *Link Roads.*—Apart from the general question of village road development there is the short link from main and trunk roads with villages and railway stations. A village or a railway station a few furlongs off a main road may be inaccessible to wheeled traffic during the monsoon. In such cases it is often administratively inconvenient and uneconomical that the main road should be the care of one authority and the short link of another, and it is always worthy of consideration how far in such cases the responsibility for the links should not be placed upon the authority responsible for the main road. We add at Appendices 4 and 5 lists of link or feeder roads required by railways. This is not exhaustive and for any general plan the railways should be consulted on this point.

45. *Views of the Great Indian Peninsula Railway in regard to the road policy of the Government.*—The Great Indian Peninsula Railway point out that they are concerned with the following roads, the improvement of which is to be financed from the road development account.

(*a*) Burhanpur-Ichhapur Road (New road).

(*b*) Great Northern Road (Raising in class 30 miles on the Jubbulpore-Katni Section).

(*c*) Great Southern Road (Construction of bridge over Wardha River on the Warora-Wun Section).

(*d*) Burhanpur-Khandwa Road.

(*e*) Akola-Murtazapur Road (New road).

As regards (*a*), the railway states that when this road is constructed a large amount of traffic is bound to be diverted to it from between Burhanpur and Bhusawal. It is suggested that a road be constructed from Ichhapur to Raver Station on the railway which will provide communication with this area without affecting the interests of the railway.

As regards (*b*), buses already ply over this road and further improvements on it will stimulate competition still further.

(*c*) The railway have no objection to the construction of this bridge.

(*d*) The construction of the Burhanpur-Khandwa Road will, it is stated, seriously affect the Great Indian Peninsula interests. It is claimed that the train service between Burhanpur and Khandwa is already good and the road, if improved, will only have the effect of introducing severe competition.

(*e*) This road is definitely parallel to the railway and must have the effect of diverting traffic from it.

The Divisional Traffic Manager, Nagpur, states that he understands the following roads are to be constructed from provincial revenues, and it is suggested that they be postponed in favour of roads that will help the railway, a list of which is given in Appendix:—

(*a*) Nandura to Malkapur and Malkapur to Hirankhed.

(*b*) Sindi to Warora *viâ* Nanduri.

(*c*) Katol to Jalakhera.

(d) Barhne to Jamai.

(*e*) Betul to Harda.

46. *Views of the Bengal-Nagpur Railway.*—We give in Appendix particulars of the roads required by the Bengal Nagpur Railway in the Central Provinces.

The Bengal Nagpur Railway complain that the local Government refuse to permit a railway representative to attend the Road Board meetings, and that it would appear that practically all the provincial share from the central road development account is being devoted to the construction of bridges and improvement of trunk roads; little or nothing appears to be devoted to the construction of roads which might open up new areas at present deficient in communications. We shall refer fully to the interests of railways in provincial road development and the necessity of railways being closely in touch with the local governments whenever improved road projects or programmes are being considered in the general part of our report and we therefore offer no further comments here on the remarks furnished to us by the Bengal Nagpur Railway.

CHAPTER VII.—SUMMARY OF CONCLUSIONS.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

(1) There are in the Central Provinces 2,501 miles of railways and 5,135 miles of metalled roads, of which all but 291 miles are maintained by the Provincial Public Works Department. 84 per cent. of the current expenditure is met from provincial revenues, 82 per cent. of the total road milage and 94 per cent. of the metalled milage being provincial. (Paras. 3—5.)

(2) The mean density of population in the areas having a density of 100 and over is 167 per square mile. The average dependent upon one mile of railway is $37\frac{1}{2}$ square miles and of metalled road about 18 square miles. 35 per cent. of the milage of metalled roads are parallel with a railway and within ten miles of it, and 73 per cent. of the milage of railways has a metalled road so parallel with it. (Para. 6.)

(3) More bridges are required, and a feature of recent developments in the Central Provinces and Berar has been the development of submersible brides. (Paras. 7 and 8.)

(4) The general condition of metalled roads is good and the cost of maintenance is low, but a problem will arise in the future when dust reducing measures have to be undertaken. (Para. 9.)

CHAPTER III.—MOTOR COMPETITION WITH RAILWAYS IN THE CENTRAL PROVINCES.

(5) There is an extensive system of narrow gauge railways. 62 per cent. of the milage of broad gauge railways, 100 per cent. of the milage of metre gauge railways, and 70 per cent. of the milage of narrow gauge railways has a metalled road parallel and within ten miles. (Paras. 10 and 11.)

(6) There are 222 buses plying in the Central Provinces in competition with the Great Indian Peninsula Railway, and this competition has been particularly felt on the Central Provinces Light Railways. We think that the present losses of the Great Indian Peninsula Railway in the Central Provinces owing to motor competition may amount to Rs. $20\frac{1}{2}$ lakhs. There has been a decrease on the whole Great Indian Peninsula Railway system of 16 per cent. in the number of passengers and 19 per cent. in the passenger earnings, compared with 49 per cent. and 57 per cent. respectively in the case of Central Provinces Light Railways. (Paras. 12—16.)

(7) The Great Indian Peninsula Railway are endeavouring to meet competition by the revision of time-tables, reduction of fares, the provision of halts, and co-ordination between road and rail services. In particular we draw attention to the institution of intelligence services to watch competition by motor buses. The

Great Indian Peninsula Railway have not yet evolved a satisfactory light railway unit. (Para. 17.)

(8) We refer to the representation on behalf of the Managing Agents of the Light Railways in our report of Bombay. (Para. 18.)

(9) The Bengal Nagpur Railway report serious losses on the Satpura Light Railways. We think the losses of the Bengal Nagpur Railway due to motor competition may be placed at about Rs. 9 lakhs. The losses on the Satpura Railway have been substantial. (Paras. 19—22.)

(10) The Bengal Nagpur Railway has endeavoured to meet bus competition by cheap day return tickets on Bazar days and two to three days return tickets at $1\frac{1}{4}$ of a single fare. Steam coaches and light trains have not been successful owing to speed restrictions on the Light Railways. (Para. 23.)

(11) The Bengal Nagpur Railway report that at present practically no goods traffic is carried by competitive motor transport. (Para. 24.)

(12) The difficulties of the Light Railways are brought into strong relief in the Central Provinces. These are due to limited speed, want of flexibility, inability to provide door-to-door service, and other miscellaneous disadvantages which we discuss in detail. These railways are seriously handicapped in meeting competition, and possibly the only solution is for Light Railways to be allowed to operate road motor transport. (Paras. 25—30.)

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION, AND THE PRESENT CONDITION OF MOTOR TRANSPORT BUSINESS.

(13) There are about 1,780 motor taxis, lorries and buses plying in the Central Provinces. There appears to be considerable unemployment among them. The desirability of restricting the number of buses on any road so as to eliminate uneconomic competition is a question on which there is divergence of opinion. (Paras. 31—33.)

(14) Provincial taxation in the Central Provinces is light. (Para. 34.)

(15) On the whole there is certain body of opinion in favour of stricter enforcement of regulations. (Para. 35.)

(16) Speed governors have on the whole been satisfactory. There is a body of opinion in favour of compulsory insurance against passengers risk. (Paras. 36 and 37.)

CHAPTER V.—BRANCH LINE RAILWAY PROJECTS.

(17) We discuss various pending railway projects in the light of the recent developments of motor transport. (Paras. 38 and 39.)

CHAPTER VI.—PROGRAMME OF ROAD DEVELOPMENT.

(18) There is an extensive programme for road development amounting to a total of Rs. 2·69 crores drawn up district by district

and consolidated by Divisional Committees, but railways were not generally represented upon the committees which drew up these programmes, and we draw attention to certain road projects which will adversely affect railways. (Paras. 40—42.)

(19) The possibility of greater activity in the development of purely local roads and link roads with villages and railway stations is suggested. (Paras. 43 and 44.)

(20) The views of the Great Indian Peninsula Railway and the Bengal Nagpur Railway on the road policy are stated. (Paras. 45 and 46.)

APPENDIX 1.

Particulars regarding communications in the area having a density of population exceeding 100 per square mile, that is, excluding Chanda district and Mandla district.

Area	85,581 square miles.
Population	14,302,262
Average density	167 per square mile.

Roads and Railways.

	Length in miles.	Length per 100 Sq. miles of area.	Area per mile of road or railway. Sq. miles.	Persons per mile of road or railway.
1. Railways	2,290	2·67	37·45	6,245
2. Metalled roads	4,730	5·56	17·98	3,005
3. Improved or motorable unmetalled roads (fair weather).	1,920	2·24	44·64	7,450
4. Total motorable roads	6,680	7·80	12·82	2,147
5. Other unmetalled roads. Say	817	·95	105·26	17,506
6. Total all roads. Say	7,497	8·77	11·40	1,908

The area more than 10 miles from any railway line is about 47,212 square miles or 55 per cent. of total.

APPENDIX 2.

Schedule of Motor Vehicle Taxes, Central Provinces and Berar.

	Annual rate of tax.
Part A.—Private Vehicles.	
Motor cycles.	Rs.
Not exceeding 200 lbs. in weight unladen	5
Exceeding 200 lbs. in weight unladen	10
Additional tax for side-car or trailer	5
Other motor vehicles, excepting lorries.	
Not exceeding 15 cwt. in weight unladen	15
Exceeding 15 cwt. but not exceeding 1½ tons in weight unladen	25
Exceeding 1½ tons but not exceeding 2 tons in weight unladen	35
Exceeding 2 tons but not exceeding 3 tons in weight unladen	100
Additional tax for each trailer	10
Part B.—Motor Vehicles for hire.	
Motor cycles.	
Not exceeding 200 lbs. in weight unladen	15
Exceeding 200 lbs. in weight unladen	30
Additional tax for side-car or trailer	10
Motor cabs and motor omnibuses.	
Seating capacity for passenger not more than 6	40
Exceeding 6 but not exceeding 10	80
Exceeding 10 but not exceeding 15	140
Exceeding 15 but not exceeding 20	160
Exceeding 20 but not exceeding 25	200
And thereafter for each additional seat	50
Additional tax for each trailer	20
Part C.—Motor Lorries, whether private or for hire.	
Not exceeding 15 cwt. in weight unladen	50
Exceeding 15 cwt. but not exceeding 1½ tons in weight unladen	100
Exceeding 1½ tons but not exceeding 2 tons in weight unladen	150
Exceeding 2 tons but not exceeding 3 tons in weight unladen	250
Exceeding 3 tons but not exceeding 4 tons in weight unladen	350
Additional tax for each trailer	50

The above taxes are for motor vehicles fitted with pneumatic tyres. A 50 per cent. higher tax shall be leviable on any motor vehicle fitted with solid or semi-solid rubber tyres.

APPENDIX 3.

New Roads proposed to be constructed or unmetalled roads proposed to be metalled in near future in Central Provinces and Berar (arranged in order of urgency by Commissioners' Division).

Item No.	Serial No. of Divisional order of urgency.	District.	Name of road.	Length in Miles.	Class.		Rough cost of construction.		Remarks.
					As at present.	Now proposed.	Per mile.	Total.	
			Nagpur Civil Division.				Rs.	Rs.	
1	2	Bhandara . .	*Rising in class Bhandara Railway Station Mohari-Tumsar section and bridging unbridged crossings.*	13⅜	*II-A*	*I*	..	*1,47,000*	*A moorum road not opened to Motor traffic except private cars. It is proposed to raise it to class I (i.e. to metal it). Bengal Nagpur Railway.*
2	2	Balaghat . .	*Raising in class from Waraseoni to Balaghat and bridging.*	*10*	*II-A*	*I*	*5,000*	*50,000*	*Ditto.*
3	4	Nagpur . . Wardha . . Chanda . .	*Raising in class the secton from Bori to Warora* i.e., *restoration of old Southern road.*	*49⅝*	*II-B and III*	*I*	..	*6,48,000*	*An existing fair weather road. Great Indian Peninsula Railway.*
4	7	Balaghat . .	Raising in class the Balaghat-Seoni road—the section from miles 43 to 55 and bridging.	13	II-A	I	8,000	1,04,000	As per item 1 above.
5	9	Nagpur . .	*Constructing Katol-Jalalkheda . . .*	*14⅛*	..	*I*	*20,000*	*2,84,000*	*New construction, Great Indian Peninsula Railway.*
6	10	Chanda . .	Raising in class Warora-Chimur road—Miles 1 to 28 and bridging.	27¾	II-A	I	18,000	5,00,000	As per item 1 above.
7	11	Nagpur and Wardha	Constructing Umrer-Girar-Samudrapur Road.	33	..	I	20,000	6,60,000	New construction.

APPENDIX 3—*contd.*

New Roads proposed to be constructed or unmetalled roads proposed to be metalled in near future in Central Provinces and Berar (arranged in order of urgency by Commissioners' Division)—contd.

Item No.	Serial No. of Divisional order of urgency.	District.	Name of road.	Length in Miles.	Class.		Rough cost of construction.		Remarks.
					As at present.	Now proposed.	Per mile.	Total.	
			Nagpur Civil Division—contd.				Rs.	Rs.	
8	11	Wardha . .	Constructing Karanja-Wadhona road .	14	..	I	20,000	2,80,000	New construction.
9	12	Chanda . .	Raising Mosam—Allapali section . .	7½	II-A	I	14,000	1,05,000	As per item 1.
10	14	Balaghat . .	*Raising in class and bridging from mile 4 to Katangi.*	*16*	*II-A*	*I*	*8,000*	*1,28,000*	*Do. Bengal Nagpur Railway.*
11	15	Nagpur . .	Constructing Parseoni-Dumri-Khurd Railway Station Road, or constructing Parseoni-Dahegaon road (whichever proves to be a better and cheaper alignment).	7½	..	I	20,000	1,50,000	New construction.
12	16	Bhandara . .	Constructing Lakhni-Sangarhi-Nawegaon road.	20½	..	I	16,000	3,28,000	Ditto.
13	16	Do. . .	Constructing Nawegaon-Palandur-Chichgarh.	15½	..	I	15,000	2,44,000	Ditto.
14	..	Do. . . .	Raising in class first 8 miles of Nawegaon-Palandur Road and bridging.	8	III	I	14,000	1,12,000	A fair weather road.
15	..		Raising in class Deori-Chichgarh road and bridging.	12½	II-B	I	12,000	1,54,000	Partially moorumed.
16	19	Bhandara . .	Raising in class and bridging Pawni-Ajgaon road.	2	III	I	14,000	28,000	Fair weather road.
17	..	Do. . .	Constructing road from— (*a*) Ajgaon to Lakhandur . . .	11½	..	I	16,000	4,08,000	New construction.
		Do. . .	(*b*) Lakhandur to Wadegaon Station road.	14	..	I	16,000		

18	20	Do. . .	Raising in class Deori-Sategaon road and bridging.	14 11/16	II-A & II-B	I	14,000	2,05,000	A moorumed road.
19	21	Balaghat . .	Raising Rajegaon-Kirnapur-Lanji road and bridging.	23 3/8	II-A	I	10,000	2,31,000	Ditto.
20	22	Nagpur . .	Constructing Kalmeshwar-Dhapewara-Saoner road with Feeder to Mohpa.	16 1/2	..	I	20,000	3,30,000	New construction.
			TOTAL .					50,99,000	
			Chhattisgarh Civil Division.						
21	1	Raipur . . .	Mahasamand Railway Feeder road . .	2/16	..	I	7,100	4,000	New construction.
22	1-A	Bilaspur . .	Ratanpur Katghora. (Raising) . .	33	II-A	I	16,000	5,28,000	
23	3	Do. . .	*Connecting Janjgir with Bilaspur involving the following works :—*						
			i. *Raising Bilaspur-Pamgarh section of Bilaspur-Sheorinarayan Road-Miles 8 to 18, and bridging from mile 2 3/8 to 18.*	*11*	*II-A*	*I*	..	*2,10,000*	*Excluding the cost of bridging Arpa and Nilagar Rivers, Bengal Nagpur Railway.*
			ii. *Constructing road from Mulmulla to Tarod.*	*7*	..	*I*	..	*3,68,000*	*Excluding the cost of bridging the Hasdeo river, Bengal Nagpur Railway.*
			iii. *Constructing road from Tarod to Champa via Janjgir.*	*16*	..	*I*	..		
24	4	Raipur . . .	*Bridging the Mahanadi river at Arang* .	..	..	..	..	*7,00,000*	*New work, Bengal Nagpur Railway.*
25	5	Do. . .	*Raipur-Bilaspur Road. Raising miles 34 to 40 and bridging.*	*6 1/2*	*II-A*	*I*	..	*2,51,000*	*Ditto.*
26	6	Drug . . .	*Raising in class Bilaspur-Raipur Road and bridging.*	*8 1/2*	*II-A*	*I*	..	*78,000*	*Ditto.*
27	9	Bilaspur . .	*Bilaspur-Raipur Road. Raising in class and bridging.*	*5 1/2*	*II-A*	*I*	..	*32,000*	*Ditto.*
28	10	Raipur . . .	Raipur-Pallari-Baloda-Bazar Road.						
			i. Raising in class . . .	43 3/8	II-A	I	..	6,62,000	
			ii. Bridging all water ways . .	..	..	..	..	..	

APPENDIX 3—*contd.*

New Roads proposed to be constructed or unmetalled roads proposed to be metalled in near future in Central Provinces and Berar (arranged in order of urgency by Commissioners' Division)—contd.

Item No.	Serial No. of Divisional order of urgency.	District.	Name of road.	Length in Miles.	Class.		Rough cost of construction.		Remarks.
					As at present.	Now proposed.	Per mile.	Total.	
			Nagpur Civil Division—contd.				Rs.	Rs.	
8	11	Wardha . .	Constructing Karanja-Wadhona road .	14	..	I	20,000	2,80,000	New construction.
9	12	Chanda . .	Raising Mosam—Allapali section . .	7½	II-A	I	14,000	1,05,000	As per item 1.
10	14	Balaghat . .	*Raising in class and bridging from mile 4 to Katangi.*	*16*	*II-A*	*I*	*8,000*	*1,28,000*	*Do. Bengal Nagpur Railway.*
11	15	Nagpur . .	Constructing Parseoni-Dumri-Khurd Railway Station Road, or constructing Parseoni-Dahegaon road (whichever proves to be a better and cheaper alignment).	7½	..	I	20,000	1,50,000	New construction.
12	16	Bhandara . .	Constructing Lakhni-Sangarhi-Nawegaon road.	20½	..	I	16,000	3,28,000	Ditto.
13	16	Do. . .	Constructing Nawegaon-Palandur-Chichgarh.	15½	..	I	15,000	2,44,000	Ditto.
14	..	Do. . . .	Raising in class first 8 miles of Nawegaon-Palandur Road and bridging.	8	III	I	14,000	1,12,000	A fair weather road.
15	..		Raising in class Deori-Chichgarh road and bridging.	12⅛	II-B	I	12,000	1,54,000	Partially moorumed.
16	19	Bhandara . .	Raising in class and bridging Pawni-Ajgaon road.	2	III	I	14,000	28,000	Fair weather road.
17	..	Do. . .	Constructing road from— (*a*) Ajgaon to Lakhandur . . .	11½	..	I	16,000	4,08,000	New construction.
		Do. . .	(*b*) Lakhandur to Wadegaon Station road.	14	..	I	16,000		
18	20	Do. . .	Raising in class Deori-Sategaon road and bridging.	14⅝	II-A & II-B	I	14,000	2,05,000	A moorumed road.
19	21	Balaghat . .	Raising Rajegaon-Kirnapur-Lanji road and bridging.	23⅜	II-A	I	10,000	2,34,000	Ditto.
20	22	Nagpur . .	Constructing Kalmeshwar-Dhapewara-Saoner road with Feeder to Mohpa.	16½	..	I	20,000	3,30,000	New construction.
			TOTAL .					50,99,000	
			Chhattisgarh Civil Division.						
21	1	Raipur . . .	Mahasamand Railway Feeder road . .	⅝	..	I	7,100	4,000	New construction.
22	1-A	Bilaspur . .	Ratanpur Katghora. (Raising) . .	33	II-A	I	16,000	5,28,000	
23	3	Do. . .	*Connecting Janjgir with Bilaspur involving the following works :—*						
			i. *Raising Bilaspur-Pamgarh section of Bilaspur-Sheorinarayan Road-Miles 8 to 18, and bridging from mile 2¾ to 18.*	*11*	*II-A*	*I*	..	*2,10,000*	*Excluding the cost of bridging Arpa and Nilagar Rivers, Bengal Nagpur Railway.*
			ii. *Constructing road from Mulmulla to Tarod.*	*7*	..	*I*	..	*3,68,000*	*Excluding the cost of bridging the Hasdeo river, Bengal Nagpur Railway.*
			iii. *Constructing road from Tarod to Champa via Janjgir.*	*16*	..	*I*	..		
24	4	Raipur . . .	*Bridging the Mahanadi river at Arang* .	..	..	..	..	*7,00,000*	*New work, Bengal Nagpur Railway.*
25	5	Do. . .	*Raipur-Bilaspur Road. Raising miles 34 to 40 and bridging.*	*6½*	*II-A*	*I*	..	*2,51,000*	*Ditto.*
26	6	Drug . . .	*Raising in class Bilaspur-Raipur Road and bridging.*	*8½*	*II-A*	*I*	..	*78,000*	*Ditto.*
27	9	Bilaspur . .	*Bilaspur-Raipur Road. Raising in class and bridging.*	*5½*	*II-A*	*I*	..	*32,000*	*Ditto.*
28	10	Raipur . . .	Raipur-Pallari-Baloda-Bazar Road.						
			i. Raising in class . . .	43⅜	II-A	I	..	6,62,000	
			ii. Bridging all water ways . .	..	..	..	..	..	

New Roads proposed to be constructed or unmetalled roads proposed to be metalled in near future in Central Provinces and Berar (arranged in order of urgency by Commissioners' Division)—contd.

Item No.	Serial No. of Divisional order of urgency.	District.	Name of road.	Length in Miles.	Class.		Rough cost of construction.		Remarks.
					As at present.	Now proposed.	Per mile.	Total.	
			Chhattisgarh Civil Division—contd.				Rs.	Rs.	
29	11	Drug . . .	Simga-Bemetara Road. Raising in class and bridging.	14½	II-A	I	14,000	1,98,000	
30	12	Raipur . . .	Raipur-Sambalpur Road. Raisng in class and bridging miles 85 to 95, 97 to 113⅝.	28⅝	II-A	I	14,000	4,01,000	
31	13	Do. . . .	*Arang-Khariar Road (Raising)* . . .	*52⅜*	*II-A*	*I*	*6,000*	*3,16,000*	*Bengal Nagpur Railway.*
32	14	Drug . . .	Raising in class and bridging Balod to Kusumkasa.	10⅞	II-A	I	14,000	1,53,000	
	14	Do. . . .	Kusumkasa to Pathratola and to Padur .	22	..	I	16,000	3,52,000	
		Do. . . .	Padur to Chanda District Border . .	26⅝	II-B	I	14,000	3,73,000	
33	15	Bilaspur . .	*Constructing Kota-Suitarai-Achanakmar-Chaparwara-Lamni-Keonchi road.*	*44*	..	*I*	*20,000*	*8,80,000*	*New construction, Bengal Nagpur Railway.*
			TOTAL .					55,06,000	
			Jubbulpore Division.						
34	3	Damoh . . .	Raising in class Damoh-Batiagarh-Buxwaho to Panna Border.	26½	II-A	I	..	1,30,000	16⅝ Miles have been metalled during 1929-30 scarcely.
35	4	Saugor . . .	Raising Malthome-Khimlasa-Etawah road.	23⅞	II-A	I	..	2,00,000	
36	10	Seoni . . .	*Raising Seoni-Mandla road from near Keolari to Nainpur 11 miles.*	*11*	*II-B*	*I*	..	*1,10,000*	*Bengal Nagpur Railway.*
37	12	Mandla . . .	Raising Dindori-Amarkantak road . .	49½	II-A	I	..	2,88,000	
38	14	Saugor . . .	Raising Rahatgarh to Bhopal State Border.	11½	III	I	..	1,38,000	
39	29	Do. . . .	Constructing Rehli-Chandpur Road . .	6	..	I	..	2,50,000	New construction.
40	31	Mandla . . .	Raising Mandla-Dindori Road-Miles 36 to 48½ and on to mile 64.	29¾	II-A	I	..	3,57,000	
41	32	Do. . . .	Raising Shahapur-Birsinghpur Road .	29⅝	II-A	I	..	1,50,000	
			TOTAL .					16,23,000	
			Nerbudda Division.						
42	5	Betul . . .	*Raising Betul-Harda Road (from Kheri) Miles 13 to 52.*	*40*	*II-B & III*	*I*	..	*4,53,000*	*Great Indian Peninsula Railway.*
43	7	Hoshangabad .	*Raising Timarni-Dularia section of Old Bombay Road.*	*32½*	*III*	*I*	..	*6,43,000*	*Ditto.*
44	8	Narsinghpur . .	*Raising Old Bombay Road Kareli to Gadarwara 20 miles, and Dokarghat to Jubbulpore border 24 miles.*	*44*	*II-B & III*	*I*	..	*9,56,000*	*Ditto.*
45	11	Nimar . . .	Constructing Burhanpur-Shahpur-Ichhapur Road.	16	..	I	..	3,70,000	New Road under construction.
46	12	Chhindwara . .	Raising Sausar-Rajna road . . .	12⅜	II-B	I	..	72,000	
47	15	Nimar . . .	*Raising Harsud-Khirkiya section of the Old Bombay Road.*	*10*	*II-B & III*	*I*	..	*1,80,000*	*Great Indian Peninsula Railway.*
48	17	Betul . . .	Raising Multai-Chilkapur Road . .	38	II-B	I	..	3,80,000	
49	18	Hoshangabad .	*Constructing a new road from Khaperkheda to Sainkheda.*	*15*	..	*I*	..	*4,00,000*	*New construction, Great Indian Peninsula Railway.*
50	19	Do. . . .	*Raising section of Old Bombay Road-Harda to Nimar Border.*	21⅞	*II-B*	*I*	..	*4,28,000*	*Great Indian Peninsula Railway.*
51	20	Chhindwara . .	Constructing Barkoohe-Jamai road . .	9	..	I	..	1,00,000	New construction.
52	21	Nimar . . .	Constructing Mundi-Punasa-Nimarkhedi .	33	..	I	..	6,00,000	Ditto.
			TOTAL .					46,42,000	

APPENDIX 3—*contd.*

New Roads proposed to be constructed or unmetalled roads proposed to be metalled in near future in Central Provinces and Berar (arranged in order of urgency by Commissioners' Division)—concld.

Item No.	Serial No. of Divisional order of urgency.	District.	Name of road.	Length in Miles.	Class.		Rough cost of construction.		Remarks.
					As at present.	Now proposed.	Per mile.	Total.	
			Berar Division.				Rs.	Rs.	
53	2	Yeotmal . .	Raising in class Khandala-Pardi section .	19	II-A	I	..	1,30,000	
54	4	Akola . . .	Constructing Karanja-Darwah Diversion .	1⅞	..	I	..	27,000	New construction.
55	7	Yeotmal . .	Constructing Wun-Dhanora Road . .	25¼	..	I	..	6,40,000	Ditto.
56	8	Akola . . .	Constructing Popatkhera-Narnalla Road .	6	..	I	..	1,20,000	Ditto.
57	12	Do. . . .	Constructing Malegaon-Risod-Loni Road .	36	..	I	..	7,20,000	Ditto.
58	18	Buldana . .	Constructing Sindkhed-Deolgaonraja Road	7⅞	..	I	..	1,50,000	Ditto.
59	19	Yeotmal . .	Umerkhed-Bitergaon	18	..	I	..	2,70,000	Ditto.
60	23	Amraoti . .	*Constructing Daryapur-Anjangaon Road* .	*12*	*III*	*I*	..	*2,40,000*	*New construction, Great Indian Peninsula Railway.*
61	24	Bulana . .	Constructing Jalgaon-Wasali Road . .	15	..	I	..	3,00,000	New construction.
62	25	Yeotmal . .	Constructing Babulgaon-Mohada *via* Kotha, Kalamb, and Ralegaon.	44	..	I	..	8,80,000	Ditto.
63	26	Akola . . .	*Constructing Akot-Hivarkhed Road* . .	*14*	..	*I*	..	*2,80,000*	*New construction, Projected Railway.*
64	27	Do. . . .	Constructing Hiwarkhed to Telhara Road	9	..	I	..	1,80,000	New construction.
65	28	Do. . . .	Constructing Pathur to Chikalwal Road and on to Border.	15	..	I	..	3,00,000	Ditto.
66	29	Do. . . .	Constructing Ugwa-Andura Road . .	10	..	I	..	2,00,000	Ditto.
67	30	Amraoti . .	Constructing Daryapur-Badner Ganga Road.	15½	..	I	..	3,10,000	Ditto.
68	31	Do. . . .	Mangrul Chawala Dhamak Deogaon .	25	..	I	..	4,90,000	
69	32	Do. . . .	Khirpi Ladki	20	..	I	..	4,00,000	
70	33	Buldana . .	*Nandura-Malkapur Harankhed Road* .	*26*	..	*I*	..	*5,20,000*	*Great Indian Peninsula Railway.*
71	34	Do. . . .	Khamgaon-Atali-Sawargaon Loni-Anjani Buzruk.	38	..	I	..	7,60,000	
								69,17,000	

ABSTRACT.

	Rs.
Nagpur Division	50,99,000
Chhattisgarh Division	55,06,000
Jubbulpore Division	16,23,000
Nerbudda Division	46,42,000
Berar Division	69,17,000
	2,37,87,000

APPENDIX 3—*contd.*

List of Bridges proposed to be constructed in near future in Central Provinces and Berar (arranged in order of urgency by Commissioner's Divisions).

Serial No. in Divisional order of urgency.	District.	Name of road or bridge.	Nature of crossing.	Approximate cost of construction
				Rs.
		Nagpur Civil Division.		
2	*Bhandara* . .	*Bhandara Railway Station-Mohari-Tumsar road—bridging the Sur river in mile 4.*	*Raised causeway* .	. .
		Tumsar-Rampaili-Wara-Seon-Balaghat road—		
		(i) *Bawanthari river* .	*Submerged bridge* .	*2,00,000*
		(ii) *Chuni river* . .	*Ditto* . .	*1,50,000*
3	*Chanda* . . .	*Nagpur-Chanda road—bridging the Mul river in mile 97 and diversion of road.*	*Ditto* . .	*1,50,000*
4	*Ditto* . . .	*Chanda-Warora road—*		
		(i) *Erai river in mile 92* .	*Ditto* . .	*1,00,000*
		(ii) *Nanduri nala in mile 70.*	*Ditto* . .	*25,000*
5	*Wardha* . .	*Wardha-Hinganghat road—Wana river at Hinganghat*	*Ditto* . .	*1,00,000*
6	*Balaghat* . .	*Gondia-Balaghat road—*		
		(i) *Bagh river in mile 13*	*Ditto* . .	*80,000*
		(ii) *Ghisri river in mile 15*	*Ditto* . .	*25,000*
				3,30,000
		Jubbulpore Civil Division.		
2	*Jubbulpore* . .	*Jubbulpore-Mirzapur road—bridging the Hiran river in mile 23.*	*Submersible bridge* .	*1,46,000*
5	Mandla . . .	Mandla-Dindori road—bridging the Nerbudda river at Manote in mile 18.	Ditto . .	2,50,000
8	Ditto . . .	Jubbulpore-Dindori road—Mahanadi river in mile 40.	Raised causeway .	40,000
20	Ditto . . .	Jubbulpore-Mandla road—		
		(i) Billa nala in mile 15 .	High level bridge	65,000
21	Ditto . . .	(ii) Hingna nala in mile 23	Ditto . .	50,000
23	*Ditto* . . .	*Bamhni-Anjania road—Banjar river at Bamhni.*	*Submersible bridge* .	*1,50,000*
27	Jubbulpur . .	Katni-Barni road—Mahanadi river in mile 17.	High level bridge .	1,00,000
				8,01,000

APPENDIX 3—*contd.*

List of Bridges proposed to be constructed in near future in Central Provinces and Berar (arranged in order of urgency by Commissioner's Divisions) —contd.

Serial No. on Divisional order of urgency.	District.	Name of road or bridge.	Nature of crossing.	Approximate cost of construction.
				Rs.
		Nerbudda Civil Division.		
2	*Hoshangabad* . .	*Hoshangabad-Piparia road—Tawa river, elevated causeway with approaches.*	*Raised causeway* .	*4,30,000*
6	Ditto . . .	Seoni (Malwa)-Banapura Railway station road—Kandeli river.	High level culvert. .	25,600
7	*Ditto* . . .	*Old Bombay road: Timarni-Dularia section—Ganjal river in mile 202.*	*Raised causeway* .	*1,00,000*
8	*Narsinghpur* . .	*Old Bombay road: Dokarghat to Jubbulpore border—Sher river at Belkheri.*	*Submersible bridge* .	*1,00,000*
9	*Nimar* . . .	*Khandwa-Mortakka road—Bhutia nala in mile 29.*	*Ditto* . .	*50,000*
11	*Ditto* . .	*Burhanpur-Ichhapur road—Dhamani and Mona rivers.*	*Ditto* . .	. .
13	*Ditto* . . .	*Burhanpur-Dhertalai road—Dewal and Khakri rivers.*	*Ditto* . .	*1,50,000*
14	Hoshangabad .	Timarni-Rahatgaon road—Anjal river.	Ditto . .	34,000
18	Ditto . .	Khaparkheda-Sainkhera Road—Dudhi river.	Raised causeway .	80,000
				10,19,600
		Chhattisgarh Civil Division.		
2	Drug . . .	Brug-Balod road—		
		(i) Phulgaon nalla . .	Submersible bridge	89,000
		(ii) Tandula river . .	Ditto . .	70,000
6	Ditto . . .	Drug-Bemetara road—Deokar nalla.	Ditto . .	50,000
11	Ditto . . .	Simga-Bemetara road—Sheonath river.	Ditto . .	1,50,000
12	*Raipur* . . .	*Raipur-Sambalpur road—*		
		(i) *Kulhan nala in mile 16*	*Ditto* . .	*45,000*
		(ii) *Sakti nalla in mile 24*	*Ditto* . .	*35,000*
				4,39,000

APPENDIX 3—*concld.*

***List of Bridges proposed to be constructed in near future in Central Provinces and Berar (arranged in order of urgency by Commissioner's Divisions)*—concld.**

Serial No. on Divisional order of urgency.	District.	Name of road or bridge.	Nature of crossing.	Approximate cost of construction.
				Rs.
		Berar Civil Division.		
8	Akola . . .	Akola-Mangrulpir (Standen road)—bridging Katepurna river.	Submersible bridge	1,30,000
9	*Amraoti. . .*	*Raised causeway over Purna river on Daryapur-Murtizapur road.*	*Raised causeway .*	*1,25,000*
10	*Ditto . . .*	*A bridge at Dhanodi in mile 56 of the Amraoti-Morsi—Wardha river road.*	*Submersible bridge .*	*40,000*
11	*Buldana . .*	*Khamgaon-Chikhli road—bridging the Penganga river in mile 32nd.*	*Raised causeway .*	*66,000*
39	Akola . . .	Shegaon-Akot road—bridging the Man river in mile 5.	Submersible bridge.	1,50,000
				5,11,000
		Abstract.		
		Nagpur Division . . .	....	8,30,000
		Jubbulpur Division . .	....	8,01,000
		Nerbudda Division . .	....	10,19,600
		Chattisgarh Division . .		4,39,000
		TOTAL .	....	30,89,600

APPENDIX 4.

Feeder Roads required by the Great Indian Peninsula Railway.

1. From village Karwara to Patwara.
2. From village Parsorea to Ganeshganj.
3. From Deori-Panagar-Barad to Bhirai.
4. From Bijeraghogarh to Katni *vid* Patwara.
5. Approach road to Pusad station.
6. The Damoh-Gasiabad Road should be extended to Amanganj.
7. Panmauria to Dundea.
8. The road from Saugor to Ratangarh should be metalled for some distance.

APPENDIX 5.

Feeder roads required by the Bengal Nagpur Railway.

Station.	Railway Commercial District.	Civil District.	District Board.	Proposed Road facilities.				General remarks.
				No. of roads to be built.	Nature of roads to be built.	Names of villages (Trade centres proposed to be connected with stations).	Reasons for construction of the roads.	
Limarua . .	Nagpur . .	Mandla . .	Mandla . .	1	..	Road (2 miles long) required to connect the station with Hirdanagar which is very close to Seoni-Mandla Road.	Hirdanagar is the most important village in the vicinity. There are a number of betel leaf gardens surrounding this village and this is the principal traffic from Limarua Station. It is also from this part that the chief traffic of this Station comes.	
Central Provinces.								
Bortalao . .	Ditto . .	Bhandara .	Bhandara .	1	Metalled . .	The existing unmetalled road connecting the Station with the Great Eastern Road (7 miles long) requires to be converted into a metalled one.	It is considered that bamboos, rafters, mowha and other forest produce which are not at present brought to the station during the rains will continue throughout if the existing connection is made "Pucca".	The District Board, Bhandara, were unable to consider the suggestions on account of lack of funds.
Dewalgaon .	Nainpur . .	Ditto . .	Ditto . .	1	Ditto . .	Through this station to Chichgarh on the one side and to Lakhni on the Raipur-Nagpur main road. A side road is also necessary from Dighori village through Sangarhi to Sakoli.	The existing unmetalled roads to the villages are not passable during the rains. The suggested road would be suitable for cart traffic, resulting in general development of traffic at the station.	The District Board, Bhandara, had this under consideration.
Wadegaon .	Ditto . .	Ditto . .	Ditto . .	1	Ditto . .	To link up this Station and Lakhandur and Khurkhera villages were there is an existing "Pucca" road.	4 important villages (population 6,100) are in the vicinity of this Station but the existing cart tracks are impassable for traffic during rains.	Ditto.
Bagbahra . .	Titilagarh Sub-District.	Raipur . .	Raipur . .	1	..	Road (24 miles long) from Bagbahra Station to Pithora connecting the main Public Works Department road to Sambalpur.	At present a considerable amount of traffic in grains, timber, hides, etc., emanating from Sambalpur, Khariar Zamindary and also from Patna and Kalahandi States, are carted along the Public Works Department roads from Sambalpur and Khariar to Raipur, crossing the Mahanadi river near Belsonda. If the proposed road which was already under consideration by the Court of Wards (Koria Estate) is constructed, Bagbahra will get a considerable portion of the traffic now carted to Raipur.	
Arang Mahanadi	Ditto .	Ditto . .	Ditto . .	1	..	Approach road to the station from the local Public Works Department road which is about ½ a mile off accross paddy fields black cotton soil).	To divert some of the traffic now carted along the Public Works Department road to Raipur.	This is to be constructed by the District Council or Public Works Department the funds for construction being provided by Government.
Madras.								
Alamanda .	Ditto . .	Vizagapatam .	Vizagapatam .	1	..	The existing "Kutcha" road to the main road *requires thorough metalling.*	..	Many representation have been made by the D.C.O., Waltair, to the District Boards concerned, but nothing has been done by them due to their having no funds.

8. ASSAM.

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ASSAM.

CHAPTER I.—INTRODUCTORY.

1. We visited Shillong during the first week in September, and while we were there, the local Government convened, for the purposes of our enquiry, an informal conference presided over by Mr. Laine, Honourable Member, Finance and Public Works. Among others present at this meeting were the Honourable Minister for local Self-Government; Mr. Burke, Chief Engineer and Secretary, Public Works Department; Mr. Taylor, Superintending Engineer, Public Works Department; Messrs. Barnard and Pennell, Executive Engineers, Public Works Department; Mr. Boyagian, Agent, Assam-Bengal Railway; Mr. Cuffe, Agent and General Manager, Assam Railways and Trading Company, Limited; and Mr. Roffey representing the Indian Tea Planters Association. At this conference the road programme of the province was discussed and the traffic prospects of the various branch lines projected by the Assam-Bengal Railway were examined to ascertain whether roads instead would adequately serve the needs of the country to be developed. Details are given in Chapters V and VI below.

2. While we were in Shillong we were granted an interview by His Excellency the Governor and discussed with him the objects of our enquiry.

3. We are indebted to Mr. Burke, Chief Engineer and Secretary, Public Works Department, for many of the facts and statistics in regard to roads included in this report: and our thanks are due to Mr. Taylor, Superintending Engineer, Public Works Department, and Mr. Pennell, Executive Engineer, who accompanied us on our journeys by road in the province.

CHAPTER II.—GENERAL CONDITIONS OF COMMUNICATIONS.

4. *General.*—The area of Assam including the Sadiya and Balipara Frontier and various other hill tracts, but excluding Manipur, amounts to 53,000 square miles and the population to 8,622,251. There are 600 miles of metalled and 7,186 miles of unmetalled roads of which 500 miles and 1,680 miles respectively are in the charge of the Public Works Department, the balance being in the charge of District Boards. The Public Works Department also maintains some 2,225 miles of bridle roads. There are 1,192 miles of metre gauge railways, the majority belonging to the Assam-Bengal Railway Company which enters the province by the Surma Valley, and crossing over by its hill section to the Assam Valley, serves the left bank of the Brahmaputra. In the Assam Valley north of the Brahmaputra is the Santahar-Amingaon section of the Eastern Bengal Railway which with a branch to Dhubri and the extension to Tangla amounts to 126 miles. At the head of the Assam Valley on the left bank there are 85 miles of metre gauge railway of the Assam Railways and Trading Company. Finally there are the two small light railways, (*a*) the Tezpore-Balipara Railway 2′-6″ gauge 20 miles long and independently worked and (*b*) the Jorhat (Provincial) Railway 2′-0″ gauge and 32 miles long now jointly managed and worked by the River Steam Navigation and the India General Navigation and Railway Companies. Of the total length of metalled roads and railways only a fraction are parallel and within ten miles; there are, however, certain lengths of improved unmetalled roads parallel with railways but these do not appear at present to have stimulated motor competition with railways; indeed, their seasonal nature must always be a handicap to this.

5. *River transport.*—The steamer routes operated by the India General Navigation and Railway Companies, and the River Steam Navigation Company are extensive. In the Assam Valley these amount to nearly 700 miles and in the Surma Valley to some 300 miles or nearly 1,000 miles all. In addition there must be a very large milage of routes open to boats of various sizes. The steamer routes alone are thus more extensive than the system of metalled roads and are in aggregate length only slightly exceeded by the railways, and it is clear that in any co-ordinated plan of road development, due regard must be had to the necessity for adequate road connections with waterways no less than with railways.

6. *Recent road improvements.*—In relation to her financial resources the recent achievements of Assam in road improvements are remarkable. In discussing the road programmes, at present unfortunately suspended, in Chapter VI we shall refer somewhat more fully to what has been done. Here we may briefly state that the development of recent years may be divided into four categories. First, a programme for the general improvement of important roads and the provision of bridges, the total

programme amounting to just over one crore of rupees in 8 years. Secondly the provision of an inter-valley metalled road by the construction of a road from Shillong to Jaintiapur at an estimated cost of Rs. 21 lakhs *plus* Rs. 1·85 lakhs for a suspension bridge at Dawki which latter has been provided by a special grant from the road development account. Thirdly the levying of a special tea cess for the improvement of roads in the tea garden area; and fourthly the application of small sums which Assam gets in the road development account. The general development programme has had to be suspended after a total expenditure of Rs. 32·82 lakhs of which some Rs. 4·13 lakhs have been spent in metalling, Rs. 0·52 lakh in gravelling, Rs. 4·71 lakhs in improvements to unmetalled roads, and about Rs. 20 lakhs in bridging. The Shillong-Jaintiapur Road is now practically complete and the provincial share in the road development account amounting to something less than Rs. 2 lakhs per year has been applied partly to the completion of this and partly to the provision of bridges on the Jaintiapur-Sylhet Road. It will be seen that there has been considerable expenditure on the improvement of unmetalled roads and it is clear that great progress has been made in the direction of extensive improvements of this nature by the use of graders and allied machinery. Indeed this policy appears to have been so successful that there is now a general demand throughout the province for similar improvements. It cannot be pretended that with the heavy rainfall in Assam anything in the nature of an all-weather earth road can be expected. Nevertheless the great improvement in the general condition of these roads for the remaining 8 months of the year and the reduction of the damage done to them by the monsoon is itself a substantial improvement.

7. *Expenditure on roads.*—The expenditure on roads of all classes in Assam up to the year 1926-27 was given in the statement at page 99 of the report of the Indian Road Development Committee. The expenditure in subsequent years has been as follows:—

1927-28.

	Original works.		Repairs.	Total.
	From revenue.	From capital.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial . . .	6·20	..	18·00	24·20
Local	1·87	..	10·80	12·67
Total .	8·07	..	28·80	36·87

1928-29.

—	Original works.		Repairs.	Total.
	From revenue.	From capital.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	10·00	..	17·86	27·86
Local	3·52	..	8·65	12·17
Total .	13·52	..	26·51	40·03

1929-30.

—	Original works.		Repairs.	Total.
	From revenue.	From capital.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	12·57	2·26	22·46	37·29
Local	2·75	..	9·19	11·94
Total .	15·32	2·26	31·65	49·23

1930-31.

—	Original works.		Repairs.	Total.
	From revenue.	From capital.		
	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.	Rs. lakhs.
Provincial	6·50	21·24	21·19	48·93
Local	2·12	..	8·19	10·31
Total .	8·62	21·24	29·38	59·24

Of the above expenditure on District Board roads, however, a certain amount is derived from contributions from local Government which in 1927-28 amounted to Rs. 7·03 lakhs out of a total of Rs. 12·67, and in 1930-31 to Rs. 5·71 lakhs out of a total of Rs. 10·31 lakhs.

8. *Distribution of expenditure.*—Though it will be noticed that a very large proportion of the expenditure on roads is met from provincial funds we do not wish in this connection to suggest that having regard to the relatively small milage of provincial roads the expenditure upon them

is disproportionate. It will be seen from our description of the road programme in Chapter VI that, in recent years, during the execution of this programme, the money available has been spread over a large milage. In a province with but 600 miles of metalled roads the pro vision in the programme of 23½ miles of new metalling and 97 miles of new gravelling can hardly be regarded as extravagant. The balance has been for the provision of bridges and 630 miles of improved earth roads. The programme has definitely aimed at developing branches and feeders before trunks. That it does not go further is due to lack of resources. Provincial expenditure has, we believe, been well balanced : and though local expenditure is by comparison insignificant, yet it represents a larger proportion of local resources than is spent on roads, in any other province.

CHAPTER III.—MOTOR COMPETITION AND THE RAILWAYS.

9. *Assam-Bengal Railway.*—The Assam-Bengal Railway which principally serves the province has, so far, been little affected by motor competition. The following competitive and short-circuiting services have been reported to us :—

A.—*Competitive.*

Route.	Distance in miles.		Fares.		No. of buses.	Remarks.
	By Rail.	By Road.	By Rail.	By Road.		
			Rs. A. P.	Rs. A. P.		
Nowgong and Silghat	38	32	0 15 6	0 12 0	1 to 2	Irregular service.
Nowgong and Rupahigaon.	7	7	0 2 3	0 4 0	..	Competition has been stopped by railway issuing bazaar return tickets.
Nowgong and Phulaguri.	9	9	0 3 6	0 4 0	..	Irregular: one bus runs on Saturdays.
Simaluguri and Sibsagar.	10	10	0 3 6	..	..	15 to 20 passengers lost a day in cold weather.
Pandu and Gauhati .	5	5	0 1 9	..	..	The loss to the railway is estimated at Rs. 50 a day. The railway cannot compete, as the buses go right into Gauhati town, whereas the railway station is ½ mile outside.
Gauhati and Digaru	21	22	0 7 3	..	..	..

B.—*Short-circuiting.*

Nowgong and Kampur.	27	18	0 9 9	0 8 0 to 0 12 0	3 to 5	All the year round 50 to 60 passengers a day. The railway cannot compete.
Nowgong and Mairabari.	28	21	0 9 3	0 10 0	4 to 5	Cold weather only.
Furkating and Barua Bamungaon.	24	..	0 6 3	..	..	Passenger earnings on the railway were greatly increased by reduction to 3-pie basis.

These particulars show that the competition in Assam is at present on a very small scale, and we do not suppose the railway is losing more than about Rs. 20,000 or Rs. 25,000 on account of it. In some cases the railway has met it by reducing fares. The bus services are not always regular, and some of them only ply during the cold weather.

No carriage of goods by motor transport in competition with the railway is reported.

10. *Dibrugarh-Sadiya Railway.*—This line, which belongs to the Assam Railways and Trading Company, consists of 85 miles of metre gauge track, and serves the district at the head of the Assam Valley. Mr. Cuffe, the Agent and General Manager of the Assam Railways and Trading Company, attended the conference held by the local Government during our visit to Shillong, and we were able to discuss with him motor competition so far as it affects the Dibrugarh-Sadiya Railway.

The Assam Trunk Road, which is partly metalled, and which has in the cold weather quite a good surface, runs alongside the Dibrugarh-Sadiya Railway from Dibrugarh to Makum Junction, 35 miles, and from Makum Junction to Sakhoa Ghat, 24 miles. A district board road in a bad state of repair runs parallel with the line between Makum Junction and Margherita but there is very little competitive traffic on this.

Mr. Cuffe reported the following points :—

(1) About 72 buses ply in the area served by his railway.

(2) They are not all working in competition with the railway, and they are used indiscriminately for passenger or goods traffic, whichever offers.

(3) The largest run parallel with the railway is 30 miles.

(4) Overcrowding takes place when traffic is brisk.

(5) There appears to be a greater number of buses on the road than the traffic warrants, judging by the number running empty, or lightly loaded.

(6) The loss to the railway cannot be estimated, but is considerably less than the number of buses running might lead one to anticipate.

Mr. Cuffe informed us that he had difficulty in competing with buses in speed. Trains are limited to a maximum of 30 miles an hour on the Dibrugarh-Sadiya Railway, and are so closely timed to this, that to increase the overall speed it would be necessary to equip each crossing station with improved signalling, and point locking, permitting a higher speed over the facing points into these stations than the present limit of 10 miles. The cost of this would be some thousands of rupees for each station, and we consider the matter important as illustrating to what extent money might have to be spent by a railway, controlled by many restrictions in the interest of safe working, to enable it to compete with buses, the speed of which is admittedly very difficult to regulate, as they generally run to no time-table at all.

CHAPTER IV.—MOTOR TRANSPORT, TAXATION AND REGULATION.

11. *Motor transport in the Province.*—There are 602 motor buses and lorries and 360 motor taxis in the province of Assam. The control of public service motor transport is in the hands of the Public Works Department and the fares for buses and taxi cabs are generally prescribed. The principal motor services are the Gauhati-Shillong service and the service from Manipur Road to Imphal. On the Gauhati-Shillong Road there is a modified monopoly in that the local Government have sold the right to ply motor vehicles on the road for the carriage of passengers and goods to a company with the proviso that Government reserves the right to issue a limited number of additional licences. We understand that the service afforded by the monopoly concerned is sufficient and satisfactory although there is some criticism as to the rates of fare. We further understand that the amount paid by the monopolist practically covers the cost of maintaining the road.

12. *Views of Assam-Bengal Railway, and Assam Railways and Trading Company on Motor Transport.*—The Assam-Bengal Railway, and the Assam Railways and Trading Company, Limited draw attention to the fact that efficient motor services are of a very great benefit to the districts and can also be most useful feeders to the railways. At present, however, there is no proper control or regulation and the result is that undesirable competition is springing up, although at present it is on a comparatively small scale. The railways consider that something in the nature of a traffic board should be constituted to control the issue of licences. Licences should only be issued for a definite route on which the principal stopping places should be stated: the speed at which it is intended to run the service and the fares it is proposed to charge should also be declared. The persons applying for a licence should also guarantee a minimum service. The licensing authority before issuing such a licence should consider:—

(*a*) the suitablity of the route; the extent to which services, including adjoining railway services, are already provided; the extent to which the service applied for is desirable in the public interest;

(*b*) whether the intended stopping places are suitable and allow for co-ordination with existing services including railway services;

(*c*) whether the speed contemplated is suitable considering the nature of the road from the point of view of wear on the road, the safety of passengers, and of the public, especially in congested areas and towns and villages;

(*d*) whether the fares are reasonable. Uneconomic fares having the object of diverting traffic from existing services in the same area should not be permitted.

Other points which the railways consider should be insisted on are the following :—

(1) Licensees should be compelled to insure against accidents to passengers, and third party risks.

(2) Applications for licences should be made public, and reasonable time should be allowed for the railway and other transport agencies to submit objections.

These railways are also strongly of opinion that provision should be made for reporting and enquiry into accidents to public motor vehicles.

They also consider that railways should be given the power to run their own motor buses, and have, if necessary, financial interests in companies operating motor services.

CHAPTER V.—BRANCH LINE PROJECTS.

13. As stated in the opening chapter, the branch line projects contemplated by the Assam-Bengal Railway were discussed at the meeting convened at Shillong, to see whether new or improved roads might more economically serve the areas than the proposed railways. We give brief comments on each branch line projected by the railway.

(1) *Gauripur-Gauhati Railway.*—264 miles. Metre gauge. This line is partly in Bengal and partly in Assam, and, if constructed, will form an important through communication opening up a tract of country deficient in transport facilities. This project cannot be replaced by a road.

(2) *Chhatak-Sylhet-Jaintiapur Railway*—46 miles. Metre gauge. A portion of this project, from Sylhet to Chhatak, is to be a heavy mineral line which could not be replaced by a road. The other portion from Sylhet to Jaintiapur runs along the road alignment connecting Sylhet with Jaintiapur. This road is not yet completely metalled but is fully bridged. If the railway were built, it is practically certain that passengers would continue to use the road and the Assam-Bengal Railway agree that it would be preferable to complete the road rather than to build a new railway.*

(3) *Srimangal-Maulvi Bazar Kulaura Loop with Branch to Manumukh.*—22·9 miles. Metre gauge. In the discussion held at Shillong it was agreed that the replacement of this project by a road would be worth investigating.

(4) *Sikkani-Amguri Chord Railway.*—The improvement of the existing Assam Trunk Road from Badulipara on the Furkating-Badulipara-Jorhat Railway, southwards to Bokhaki and from Jorhat, Jhanzie to Amguri would help to develop the area. These roads already form part of the Assam road scheme. If the railway is not constructed the Assam-Bengal Railway consider that they should either be permitted to run their own motor services or the present services should be regulated.

(5) *Lalgolaghat Kukicherra Railway.*—12 miles. The construction of this line has been deferred indefinitely. It is worth considering whether if an extension were added to the existing trunk road, it would not serve the purpose adequately.

(6) *Silchar Doorband Railway.*—33·7 miles. The railway has poor prospects and the area would be better served by the roads now proposed under the Assam road scheme.

(7) *Diphu Miji Ingling Railway.*—15·88 miles. 2′ gauge. The new road from Dabuka to Damapur will serve the purpose of this line.

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* The Government of India have since accepted this view and have made a grant of Rs. 2 lakhs from there reserve in the road development account, for the metalling of the Sylhet-Jaintiapur road.

CHAPTER VI.—PROGRAMME OF ROAD DEVELOPMENT.

14. *Recent progress.*—In relation to its resources Assam has in recent years made great efforts in the direction of road improvements. A comprehensive programme was adopted in 1928, and was to be financed largely from loan funds. Unfortunately owing to the present financial position work has had to be stopped. From an informal discussion we were privileged to have at a meeting presided over by the Hon'ble Finance Member and attended by the Hon'ble Minister for Local Self-Government, the Secretary to Government in the Public Works Department, and representatives of the railway, river steamer and tea planting interests it appeared that all concerned concurred in the programme as generally representing the first needs of the province on a co-ordinated plan of development although certain misgivings were expressed as to the eventual result of developing a high class trunk road system. At present, however, the improvements proposed do not include much metalling. Possibly when things improve a more extensive programme would be framed including and going further than the balance of the suspended programme and any such plan would doubtless be discussed again with the railway and steamer interests, but for the present the completion of this would be the first objective and we will briefly refer to it.

15. *Evolution of programme.*—The programme took definite shape from the date of the first meeting of the Provincial Road Board held on the 25th February 1928. Certain important decisions were then taken as follows :—

(1) " The roads constituting the main road system of the province shall be improved and maintained by Government; and that all other roads connecting with the system shall be in the charge of the local Bodies and Municipalities."

(2) " That in tackling the problem of improving the main system of roads, the extensive method be employed by which the greater part of the funds available would be spent in raising, widening and bridging, where necessary, the system generally and a relatively small part in metalling."

(3) " That in preparing a programme of improvements the following principles should be observed :—

(*a*) That all important feeder roads leading from the railway stations and steamer ghats to the main roads of the system should be first bridged, raised and widened, where necessary, and metalled.

(*b*) That roads running contiguously with railways should for the time being ordinarily be considered of secondary importance."

(4) It was also decided that out of an annual revenue allotment of Rs. 5 lakhs per annum for 30 years a combined capital and revenue programme should be worked out.

16. *Present position.*—The programme rapidly took definite shape and work was substantially commenced during 1928-29, the first expenditure from loan being during 1929-30. All work has now been stopped and the expenditure against the programme has been as follows :—

	Metalling.		Gravelling.		Improvement to kutcha roads, widening, etc.		Bridging.			Total cost for works.
	Miles.	Cost.	Miles.	Cost.	Miles.	Cost.	Number.	Roadway span.	Cost.	
		Rs.		Rs.		Rs.		R. ft.	Rs.	Rs.
					Assam Valley.					
Full programme . . .	22·40	5,96	96·81	5,99	480	10,61	191 (and 70 culverts).	13,775	26,97	49,53
Curtailed programme to end of 1931-32.	19·8	4,13	12·5	0,52	68	1,43	149 (nearly all culverts).	10,610	15,27	(*a*)21,35
					Surma Valley.					
Full programme . . .	1·10	0,17	..	..	130·70	13,75	24 (and 225 culverts).	2,887	8,38	22,30
Curtailed programme to end of 1931-32.	..	..	..	..	36	3,28	15 (nearly all culverts).	1,743	4,67	(*b*)7,95

	Rs.
Total cost end of 1931-32—(*a*) *plus* (*b*) . . .	29,30
Add for expenditure in 1932-33	3,52
Total .	32,82

It will be seen that the balance of this programme amounts in money to some Rs. 64·28 lakhs representing the completion of some 4 miles of metalling, 85 miles of gravelling, 400 miles of improvement to unmetalled roads and some 5,000 ft. of bridging and this may be taken as representing the programme which would be carried out immediately when funds became available. Such a programme could, we think, be actually carried out, as all plans and estimates are presumably in an advanced stage, within 5 years from actual commencement of work.

17. *Other schemes in progress.*—In addition to the above general programme there is a separate scheme also being financed largely from loan for the construction of a bridged and metalled road from Shillong to Jaintiapur, so as to connect Shillong with the Surma valley and also to link the two valleys. This involves the construction of about 63 miles of new road, partly in very difficult hilly country, at a cost of Rs. 21 lakhs ; and in addition a suspension bridge of 348 feet span over the Dawki river, a grant of Rs. 1,85,000 for the latter having been made from the reserve with the Government of India in the road development account. Good progress has been made with this whole scheme, the Dawki bridge has been built and the road will be completed during this cold weather. It will, however, end at Jaintiapur. Thence to Sylhet—a distance of 23 miles—the road is being bridged and improved as an earth road as part of the general programme, but with the heavy rainfall of the locality an unmetalled road will not be serviceable and the metalling of this must be completed before full benefit can be derived from the Shillong-Jaintiapur Road. A project was once made for the construction of a branch line railway from Sylhet to Jaintiapur, but this is not likely to be proceeded with and the metalling of the road will, we believe, be the proper course in this case.*

18. *Link and feeder roads.*—With the improvement and bridging of the main road system of the province is coupled the provision of feeder roads from these main roads to railway stations and steamer ghats We have received a certain number of representations regarding the additional feeder facilities required both by railways and steamer services and these are referred to in the paragraphs that follow.

19. *Roads required by the Assam Bengal Railway.*—We give in Appendix 2 a statement furnished us by the Assam Bengal Railway giving particulars of :—

(1) New road required between Mairabari and Borigram—8 miles in length.

(2) A list of feeder roads which would be of value to the railway as connecting it with the main trunk roads. The total milage of these is 22⅞ miles.

(3) Improvements required to existing roads—96½ miles.

20. *Feeder roads required by the Eastern Bengal Railway.*—The Eastern Bengal Railway have given us (*a*) a list of feeder roads requiring repair

* *Vide* footnote, page 10.

and (*b*) a list of feeder roads requiring to be constructed ; these are given in Appendices 3 and 4 and are all in the Goalpara and Kamrup districts, north of the river.

21. *Feeder roads required by Steam Navigation Companies.*—While we were in Calcutta we interviewed Mr. G. W. Leeson, representative of Messrs. McNeil & Co. who are Agents of the River Steam Navigation Co., Ltd. and Mr. McDougall, representative of Messrs. Kilburn & Co., Managing Agents of the India General Navigation and Railway Co., Ltd. These gentlemen furnished us with a list of roads which their companies consider necessary in the province of Assam, and we give these in Appendices 5 and 6. Some of these proposals may on examination be found detrimental to the interests of the railways in existence or projected, and before being undertaken we consider they should be further discussed by the provincial board of communications, on which Steam Navigation Companies and the railways should be adequately represented.

22. *Railway opinion on the road policy hitherto followed in the province.*—We were informed by the Agent of the Assam Bengal Railway that at present there is no representative of the Assam Bengal Railway on the Assam Road Board. Both the Assam Bengal Railway and the Assam Railway and Trading Company are, however, of the opinion that the following steps should be taken in developing the road system if there is to be a proper co-ordination between roads and railways :—

(1) Roads connecting railway stations with the main parallel road should be improved and should be maintained by the Public Works Department.

(2) Main roads should be improved in those areas where there are no railways, as, for instance, Badulipar-Bokakhat and Jorhat-Teok.

(3) Motor traffic should be properly regulated over roads which are parallel to railways.

The railways complain that the present tendency appears to be to duplicate the line of the railway by a parallel metalled road, and then to permit motor competition over it, but from our investigations we consider that this is far less the case in Assam than elsewhere.

CHAPTER VII.—SUMMARY OF CONCLUSIONS.

Chapter II.—General condition of communications.

(1) There are 600 miles of metalled roads, 7,186 miles of unmetalled roads and 1,192 miles of metre gauge railway in the province (para. 4).

(2) Extensive steamer routes are operated by the India General Navigation and Railway Company and the River Steam Navigation Company, amounting to nearly 1,000 miles, and adequate road connections with these are necessary (para. 5).

(3) Assam has made remarkable progress in road development recently, compared with her financial resources. This includes general improvement and bridging of important roads; construction of a trunk road from Shillong to Jaintiapur; levying of a special tea cess for roads serving the tea gardens, and works financed by the road development account (para. 6).

(4) Money spent on road improvement has been spread over a large milage and the programme has definitely aimed at developing branches prior to trunk roads (paras. 7 and 8).

Chapter III.—Motor competition and the Railways.

(5) The Assam Bengal Railway reports very little road competition for the carriage of passengers and none for goods (para. 9).

(6) The Dibrugarh-Sadiya Railway reports some competition on the trunk road running alongside the railway. The chief difficulty in meeting this is in the matter of speed owing to limitations imposed on the Dibrugarh-Sadiya Railway. The Railway is contemplating expenditure on improved signalling and point locking to permit of higher speeds at crossing stations (para. 10).

Chapter IV.—Motor transport, taxation and regulation.

(7) The most interesting feature of motor transport is the controlled monopoly on the Gauhati-Shillong road. The amount paid by the monopolists covers the cost of maintaining the road (para. 11).

(8) The railways serving the province consider that Traffic Boards should be constituted to control the issue of licences, such issue depending on the need for the service and conditions under which it is proposed to run it. The railways consider motor bus operators should insure against accidents and that railways should have power to run motor services (para. 12).

Chapter V.—Branch Line Projects.

(9) Of the projects contemplated by the Assam Bengal Railway the following could probably be replaced by roads :—

Sylhet-Jaintiapur Railway. Srimangal-Maulvi Bazar-Kalura Loop with branch to Manumukh.

Lalaghat-Kukicherra Railway.

Silchar-Doorband Railway.

Diphu-Miji-Ingling Railway.

If the Sikkani Amguri Chord Railway is not built the Assam Bengal Railway consider they should be permitted to run their own motor services, or the present buses should be regulated. The following schemes cannot be replaced by roads :—

Gauripur-Gauhati Railway.

Chhatak-Sylhet branch (para. 13).

Chapter VI.—Programme of Road development.

(10) The road programme adopted in 1928 is generally agreed to by the various interests in the province, though railways express misgivings if high class trunk roads parallel with railways are allowed to develop (para. 14).

(11) The programme definitely contemplates important feeder roads being considered of greater importance than parallel roads (para. 15).

(12) The most important trunk road scheme in the province now being undertaken is that from Shillong to Jaintiapur connecting Shillong with the Surma Valley (para. 17).

(13) Many links and feeder roads are required by the railway and steamer interests (paras. 18-21).

(14) The Assam Bengal Railway and the Assam Railway and Trading Company emphasize the importance of feeder roads to railways and suggest that main roads should be improved in those areas where railways do not exist. Motor traffic on roads parallel with railways should be regulated (para. 22).

APPENDIX 1.

Communications in the area having a density of population of 100 per square mile and over, the following districts with the population density stated being excluded from this calculation:—Khasi and Jaintia Hills (18); Naga Hills (57); Lushai Hills (17); Manipur; Garo Hills (61); Sadiya Frontier tract and Balipara Frontier tract.

Remaining area	32,600 square miles.
Population	7,939,673
Mean density	236 per sq. mile.

——	Total miles of road or rail in area.	Miles per 100 square miles of area.	Square miles of area to mile of road or railway.	Persons per mile of road or railway.
Railways	1,192	3·66	27·40	6,660
Metalled roads	320	1·00	100·00	24,800
Other roads	7,059	..	..	..
All roads	7,379	22·6	4·42	1,075

The area, in this area, which is more than 10 miles from any railway amounts to 15,000 square miles or 46 per cent.

APPENDIX 2.

Statement furnished by the Assam Bengal Railway.

(1) *New Road to open up an unserved area.*

From Mairabari, the terminus of the Sanchoa-Mairabari Branch to Borigram—about 8 miles.

(2) *List of Feeder Roads which would be of value to the Assam Benga Railway as connections to the Main Trunk Roads.*

	Milage.
Assam Valley.	
1. Feeder connecting Jamunamukh Railway station with Nowgong Dobaka Road	2
2. Feeder connecting Chaparmukh Railway station with Assam Trunk Road	2
3. Feeder connecting Selenghat Railway station with Assam Trunk Road	8
4. Feeder connecting Amguri Railway station with Assam Trunk Road	2½
5. Feeder connecting Digaru Railway station with Assam Trunk Road	½
6. Feeder connecting Jagi Road Railway station with Assam Trunk Road	½
7. Feeder connecting Salona Railway station with Assam Trunk Road	Quite close to the stn.
8. Feeder connecting Khetri Railway station with Assam Trunk Road	1
9. Feeder connecting Dharamtul Railway station with Assam Trunk Road	⅜
10. Feeder connecting Puranigudam Railway station with Assam Trunk Road	¼
11. From Michmara Station to the Daria cross roads on the Michamara Golaghat Road	1½
12. From Bhalukmara Station to the Kamarbandha Ali road mile 8 Local Board Road	¼
Surma Valley.	
1. Feeder connecting Itakola Railway Station with Assam Trunk Road	..
2. Feeder connecting Satgaon Railway Station with Assam Trunk Road	1
3. Feeder connecting Tilagaon Railway Station with Assam Trunk Road	⅞

SURMA VALLEY—*contd.*

	Milage.
4. Feeder connecting Juri Railway Station with Assam Trunk Road	1½
5. Feeder connecting Dakshinbhag Railway Station with Assam Trunk Road	⅜
6. Feeder connecting Khathaltali Railway Station with Assam Trunk Road	½
7. Feeder connecting Hailakandi Railway Station with Assam Trunk Road	½
8. Feeder connecting Monacherra Railway Station with Assam Trunk Road	⅛
9. Feeder connecting Lalabazar Railway Station with Assam Trunk Road	¾

(3) *Existing Roads to be improved.*

1. Badulipara Station (Furkating Badulipara Jorhat Railway) to the Trunk Road about 1 mile and the Assam Trunk Road towards Bokahat	2
2. Bhamungaon Station to the Assam Trunk Road	3
3. Harashpur Station (Main line South Assam) to Dharamghar Bazar	4
4. Sylhet to Sunamganj	37
5. From Lal Kali ghat Station (Karimganj Longai Valley Railway) to main road about 1½ miles should be metalled	1½
6. Rupahigaon Station (Senchoa Mairabari Railway) to Laokoa	6
7. Jorhat (Furkating Badulipara Jorhat Railway) metalling of Trunk Road northwards to Teok	8
and to join up with Amguri Station	27

APPENDIX 3.

List of feeder roads which the Eastern Bengal Railway suggest should be improved.

Name of Railway Station.	From.	To.	Approximate Distance.	Civil District.	Condition of the road.	Remarks.
			Miles.			
Tipkai	Bogubari	Tipkai	11	Goalpara	Kutcha	Requires metalling and raising. Jute traffic is expected to be increased in large extent up to one thousand mds. per month. Can be used for Cart traffic throughout the year and motor car traffic during fair weather.
	Gosaingaon	Do.	12	Do.	Do.	Requires metalling and raising. Jute, rice, paddy, and grain traffic. Expected to be increased up to 5 thousand mds. per month.
Fakiragram	Fakiragram	Bilashipara	12	Do.	Do.	Metalling of the road will permit motor cars and lorries to ply throughout the year. Traffic will be increased to double of the present traffic. There are five bridges to be strengthened. Motor buses ply during fair weather.
Kokrajhar	Dhubri	Garubhasan	53	Do.	Do.	Should be metalled. All traffic is entirely suspended during the rainy season.
Chaprakata	Do.	Gauhali and Lakshmipur.	..	Do.	..	Bridging of the river will facilitate traffic.
	Sovaijhar Bazar	Bongaigaon	17½	Do.	Do.	Raising necessary.
	Do.	Ballamguri Bazar	3	Do.	Do.	Raising necessary.
	B. North Trunk Road.	Tilliguri Bazar	3	Do.	Do.	One culvert will be required. Will bring traffic which at present goes down by river from Tilliguri Bazar, Shalmara North Bazar Jogighopa and Abhayapuri Rajdhani.
Bijni	Bijni	Bollamguri	10	Do.	Do.	Road kept in repair but of 18 culverts only one in good condition.
	Silbari	Makra	4	Do.	Do.	Requires thorough rePairs. 3 or 4 culverts to be constructed.
	Makra	Karija Bishpani	5½	Do.	Do.	1 Bridge and 3 culverts to be constructed. Goods at present going by river to Goalpara. Estimated at 20,000 mds. annually will be secured.
Basugaon	Chapai	Basugaon	14	Do.	Do.	Requires thorough repairs and one bridge on Champainabi near Garubhasa. Expected to increase traffic up to 40 thousand mds. per year.
Sorbhog	Sorbhog	North Trunk Road	2½	Kamrup	Do.	Should be metalled. The metalling of the road should attract goods now being diverted by rivers from Barpeta.
Barpeta Road	Barpeta Road	Barpeta Town	12	Do.	Do.	Requires repairs. Action has been taken by the Authority.
Tihu	Tihu	Doomni	16	Do.	Do.	Requires metalling.
Rangiya	Rangiya Station	Durrang Road	½	Do.	Do.	If raised can be used throughout the year.
		Amingaon Nalbari Road.	⅓	Do.	Do.	Do. Do.
Ghuttapara	Station	P. W. D. Road	200 yds.	Do.	Do.	Requires periodical repairs.
	Do.	Local Board Road to Hogo.	¼	Do.	Do	Do.

APPENDIX 4.

List of feeder roads which the Eastern Bengal Railway suggest should be constructed.

Name of the Railway Station.	From.	To.	Approximate Distance.	Civil District.	Condition of the road.	REMARKS.
			Miles.			
Bijni	Ballamguri .	Soraijhar . .	3	Goalpara . .	Kutcha . .	1 bridge and 2 culverts will be required. Goods at present going by the AIE river to Goalpara and beyond. Estimated at 25,000 mds. annually will be secured.
Sorbhog	Rampur village .	Manas River .	8	Kamrup . .	Do. . .	The road terminates with half a mile off of the Rampur village. Should be extended to the village itself.
	Sorbhog (Goods APP. Road).	Rampur village .	80 yds. 8 miles 80 yds.	Do. . .	Do. . .	One culvert will be required. Will directly connect the road from the Manas river with the Goods Shed.

APPENDIX 5.

Feeder roads required in the order of urgency by the River Steam Navigation Company in Assam.

SIBSAGAR DIVISION—SOUTH BANK.

Milage.

Desang—Sibsagar (*C.28*).—The need for conversion to Ais very necessary. Money has been spent on pucca bridges but this is of no avail for the road has not yet been improved 10

LAKHIMPUR DIVISION.

Khowang (*A. 15C.*).—This road should be made an A grade road and its utility will be greatly enhanced when the Dehing river is bridged. Sanction was given for the building of this Bridge. (Third Road Board) but work has not commenced 3

SIBSAGAR DIVISION—SOUTH BANK.

Jhanzi—Jorhat (*All, C.32, B.12*).—The whole length should be A, important as a feeder to the J. P. Railway 19

SIBSAGAR DIVISION—NORTH BANK.

Badati to North Lakhimpur.—North Lakhimpur is badly isolated and an A grade road from Badati to North Lakhimpur is very necessary 8

CENTRAL ASSAM DIVISION.

Charali to Behali (*C.14*).—We have urged this be made an A grade road. At the second meeting of the Third Road Board it was agreed some work should be undertaken but no indication has been given whether a change of grade has been agreed to or effected 11

Charali—Jamguri (*B.6 and part of C.13*).—This is another important feeder road and Tea interests are specially anxious it be made reliable and serviceable all the year round, for which reason it should fall under Grade A. Extension of the road three miles North of Charali would tap an important agricultural district 15

Charali—Bishnath.—It is essential that this road which serves as an outlet to the above two roads be kept in Grade A and be well maintained. 7

GOLAGHAT DIVISION.

Bokakhat—Dhansirimukh (*C.28*).—A necessary link to connect Dhansirimukh with the main road and should be graded A 6

CENTRAL ASSAM DIVISION.

Helem—Gomirighat (*B.8*).—A short distance from Helem has been constructed but to be of any use the road should be extended as an A grade road to Gomirighat 3

Helem—Gohpur (*C.16*).—This should be converted to A grade and eventually extended to Dholpur though the Gohpur—Dholpur length is not urgent 7

APPENDIX 5—*contd.*

Feeder roads required in the order of urgency by the River Steam Navigation Company in Assam—contd.

CENTRAL ASSAM DIVISION.

	Milage.
Orang—Dhekiajuli (*C.9*).—This connection is needed to connect the Dhekiajuli district with the Singri Panchnoi Tramway and forms an important connection requiring grade A road	14

WESTERN ASSAM DIVISION.

Borpeta—Kholabanda.—Though it is possible to call at Borpeta for part of the year by small steamers through the Chaolkhola river, and all the year round connection with Borpeta and the country south of it is necessary and for this reason the above road is requested . . .	3
N. Salmara—Jogigopha (*A. I.C.*).—A feeder road to connect the Salmara district with the Brahmaputra river is much needed and to ensure continuous use this road should be grade A	3
Chapar—Bilasipara.—This portion of the projected trunk road should be given preference in order to develop the riverine trade with Chapar	16

LOWER ASSAM DIVISION.

Dalgoma—Damra—Dudnai.—The linking up of Dalgoma with the projected main road and Damra is necessary to develop this area .	5
Lakhipur Agia (*CZ*). } These roads are essential as feeder to Fakir- }	19
Lakhipur—Fakirganj. } ganj and the Government Ferry Service } across the Brahmaputra to Dhubri and should be grade A roads.	19

SIBSAGAR DIVISION—NORTH BANK.

Bihpuria—Dholpur (*C.26*).—Part of the trunk road from North Lakhimpur to Tezpur is not so urgent but should eventually be A grade .	10

SIBSAGAR DIVISION—SOUTH BANK.

Jhanzi—Sibsagar to be A grade	16

APPENDIX 6.

Feeder roads required by the India General Navigation and Railway Company.

CACHAR.

(1) Road from Silchar to Larsingah and Chandighat (Khumbir Area) to be improved. Length approx. 12 miles. Selected under 2nd Road Board Programme.

(2) Silchar—Sonbari—Sonaimukh Road.

(*a*) Narsingpur to Manierkhal stretch (approx. 12 miles) and

(*b*) Sonaimukh—Binnakandi—Lakhipur (approx. 16 miles) to be improved.

(3) Dalu to Masimpur (Jettingamukh Area) Road to be metalled. Length approx. 6 miles.

SYLHET.

(4) Fenchuganj—Sylhet Road (16 miles) to be metalled. Continuation of Sylhet Shillong Trunk Road Scheme.

(5) Fenchuganj—Brahman Bazar Road (approximate 12 miles) to be metalled. Continuation of Main Road to Sylhet. Connects Fenchuganj with Lungla and Juri Valleys.

(6) Jaintiapur—Sylhet Road. Part of Shillong Sylhet Trunk Road in 2nd Assam Road Board Programme.

(7) Sylhet—Selulikai Road. Approximate 8 miles. Selected for metalling under 2nd Road Board Programme.

(8) Sylhet—Peterganj Road. Approximate 8 miles. To be improved. Reported in very bad state and impassable last cold weather.

(9) Gobindganj—Sylhet Road (approximate length 10 miles) to be improved and made suitable for Motor Traffic. Selected for improvement but to remain unsurfaced under 2nd Road Board Programme.

(10) Chhatak—Gobindganj Road to be made suitable for Motor Traffic. (Approximate length 8 miles). Links up Chhatak with Sylhet. Selected for improvement under 2nd Road Board Programme but to be left unsurfaced.

(11) Manumukh—Maulvi Bazar Road. Approximate 8 miles. Selected for metalling under the 2nd Road Board Programme.

9. NORTH-WEST FRONTIER PROVINCE.

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NORTH-WEST FRONTIER PROVINCE.

CHAPTER I.—INTRODUCTORY.

1. In response to a letter from the Government of India suggesting that our tour might be extended to include a visit to the North-West Frontier Province, the local Government invited us to visit Peshawar, and discuss with the local Government officials the subjects we are investigating. We accordingly proceeded by road from Rawalpindi to Peshawar on October 8th. We stayed at Peshawar until October 12th.

2. Col. Gaskell, D.S.O., R.E., Secretary to the local Government, Public Works Department, furnished us with the statistics in regard to the area and communications of the North-West Frontier Province given in Chapter II; and gave us particulars of the road development which the local Government has in contemplation, and which we deal with in Chapter VI. Col. Gaskell and Lt.-Col. Wakely, R.E., kindly took us to see certain roads and bridges in various directions round Peshawar. Mr. B. Moody, Divisional Commercial Officer of the Rawalpindi Division of the North Western Railway was deputed to accompany us while we were in the province to represent the interests of that railway.

3. At Peshawar we had a meeting with Mr. J. G. Acheson, I.C.S., Deputy Commissioner, and Mr. Pugh, Assistant Superintendent of Police, and gathered from them the conditions of the motor transport industry in the Peshawar District.

4. While we were in Peshawar the Hon'ble Mr. Cunningham, I.C.S., Finance Member, granted us an interview and discussed with us the objects of our enquiry.

5. We take this opportunity of expressing our appreciation for the ready help given us by these gentlemen.

CHAPTER II.—GENERAL CONDITION OF COMMUNICATIONS.

6. *General.*—The area of the North-West Frontier Province comprising the districts of Peshawar, Hazara, Kohat, Bannu, and Dera Ismail Khan is 13,469 square miles and the population is 2,425,076 giving an average density of 180 per square mile. The density in Peshawar is 369 per square mile and in Dera Ismail Khan and Kohat only 80 and 88 per square mile respectively. There are 373 miles of railway and 3,091 miles of roads of all sorts, comprising 1,111 miles metalled, 904 miles motorable unmetalled and 1,076 other roads. There are 351 miles of metalled roads parallel with railways and within 10 miles of them, that is to say that 94 per cent. of the railways have a parallel metalled road and 31½ per cent. of the milage of metalled roads are parallel with a railway.

7. *Classification of Roads.*—The majority of the metalled roads are " Provincial " and the rest " District Board ".

8. *Communications in relation to area and population.*—As a rough method of comparing the facilities in different parts of India, we have, as usual, taken out certain figures in respect of the districts —Peshawar, Hazara, and Bannu—that have a density of population of 100 per square mile and over, and at Appendix I will be found certain particulars for these districts. From this it will be seen that the mean density of population is 265 per square mile; that the area served by one mile of railway is 31·30 square miles, by one mile of metalled road 12·40 square miles, motorable road 8·60 square miles and all roads of all classes 4·50 square miles. In the area with which we are concerned of 7,231 square miles, about 2,850 square miles, or 40 per cent., are more than ten miles from any railway.

9. *Improved Unmetalled Roads.*—A feature of the statistics in this Province is the relatively high proportion of improved or motorable unmetalled roads. This is due partly to good soil and climatic condition, and is interesting as showing what can be done in this direction. In the districts with a population density exceeding 100 per square mile, the existence of " all motorable roads " to the extent of one mile to only 8·60 square miles of area is only bettered in Madras, Bombay, and, very slightly, the Punjab.

10. *Bridges.*—Considerable development has taken place in recent years in the provision of cheap reinforced concrete vibro-pile bridges, at the low rate of about Rs. 10 per square foot or Rs. 180 per running foot of bridge 18′ wide, and these are being put down in connection with various schemes of earth road improvement and together constitute a cheap method of development which cannot fail to be of very great value.

11. *General condition of roads.*—The condition of roads is generally good. On roads heavily used by motor transport various methods of surface treating macadam are being used which not only provide a relatively dustless surface but tend to economy in maintenance.

CHAPTER III.—THE NORTH WESTERN RAILWAY AND COMPETITIVE MOTOR TRANSPORT.

12. *Extent of North Western Railway in the province.*—The total milage of the North Western Railway in the province is about 373, of which 192 miles are 5′ 6″ gauge, and 165 of 2′ 6″. The railway is distributed between Military and Commercial lines as follows:—

	Military.		Commercial.	
	5′—6″	2′—6″	5′—6″	2′—6″
Miles .	114	133	83	43

And, as we have shown, about 94 per cent. of the railway is affected by parallel roads, and the standard of the roads is generally very good.

13. *Competitive passenger bus services.*—On the Rawalpindi Division of the North Western Railway to which railway area the lines in the province belong, a quarterly check of competitive passenger bus services is now being undertaken to ascertain to what extent traffic is being diverted from the railway to the road. The North Western Railway has given us particulars of two such checks made, and these we give below:—

Service.		Miles.		Fares.		No. of trains running in each direction.	No. of buses plying.	No. of passengers by bus.	
								Check for quarter ending—	
From	To	By rail.	By road.	By rail.	By road.			3rd March 1932.	30th June 1932.
				Rs. a.	Rs. a.				
Peshawar Cantonment.	Landi Kotal .	32	32	0 10	0 8	1	10	..	80
Peshawar City	Nowshera .	24	24	0 7	0 8	7	22	270	342
Nowshera .	Mardan .	15	15	0 4	0 4	3	14	200	250
Havelian .	Haripur-Hazara.	15	14	0 4	0 4	3	20	150	230
Kohat . .	Hangu . .	27	25	0 8	0 7	2	7	120	70
Kohat . .	Thall . .	62	60	1 2	1 0	2	10	80	100
Bannu . .	Laki-Marwat.	65	37	1 0	0 12	2	6	60	40

We were informed there that the bus traffic is seasonal, so it is not easy to estimate from these particulars with any accuracy what the North Western Railway is losing, but if it is assumed that the average number of passengers checked on these two days travel by motor bus for the whole route for three hundred days in a year, and that, but for the motor buses, they would have used the railway, the resulting railway revenue would have been about Rs. $1\frac{1}{3}$ lakhs.

These assumptions may not perhaps be warranted, but in any case it would not appear that this competition has grown in the North-West Frontier Province to the extent we have found in some other provinces. We understand, however, there is much unemployment among buses in the province and there can be little doubt that when economic conditions improve bus competition is likely to become more intense.

14. *Goods traffic by motor lorry.*—The North Western Railway reports that there is a considerable amount of merchandise being carried by motor lorry in competition with the railway, and below we give particulars of this traffic together with an estimate of the loss to the railway on this account.

Commodity.	From	To	Estimated loss for 12 months, in round figures.
			Rs.
Fruits fresh .	Rawalpindi .	Peshawar City . .	380
,, ,, . .	,, . .	,, ,, . .	600
Fruits fresh and Vegetables.	Bannu . . .	Tank . . .	130
,, ,, .	,, . .	Naurang Serai . .	20
,, ,, .	,, . .	Laki Marwat . .	50
Fruits fresh . .	Landi Kotal . .	Peshawar Cantonment.	16,190
Fruits dried . .	,, . .	,, ,, .	33,960
Grain and pulses .	Banu . . .	Tank . . .	2,240
Salt . . .	,, . . .	,, . . .	1,130
Jagree . . .	,, . . .	,, . . .	1,660
Sugarcane . .	,, . . .	Naurang Serai .	90
Jagree . . .	,, . . .	Laki Marwat . .	600
Wooden bullies .	,, . . .	,, . .	50
Sugarcane . .	,, . . .	,, . .	230
Grain and pulses .	Naurang Serai . .	Bannu . . .	880
,, ,, .	Laki Marwat . .	,, . . .	2,570
,, ,, .	,, . .	Tank . . .	2,600
Tea . . .	Peshawar Cantonment.	Landi Kotal . .	7,590
Salt . .	,, ,, .	,, ,, .	3,380

Commodity.	From	To	Estimated loss for 12 months, in round figures.
			Rs.
Sugar . . .	Peshawar Cantonment.	Landi Kotal . .	24,410
Piece goods . .	,, ,, .	,, ,, . .	2,670
Iron . . .	,, ,, .	,, ,, . .	2,660
Grain . . .	,, ,, .	,, ,, . .	4,540
Flour . . .	,, ,, .	,, ,, . .	3,690
Molathi . . .	Landi Kotal . .	Peshawar Cantonment.	1,150
			1,13,470

Most of these services by lorry are over roads running parallel with the railway, but the North Western Railway reports that there are other lorry services for the carriage of salt and tobacco between Peshawar City and Kohat Cantonment, Bannu, and Tank, which short-circuit the railway and which we think the railway cannot hope to compete with as the following particulars show :—

	Time taken :— by road. Hours.	by goods train. Days.
Peshawar City to—		
Kohat Cantonment	2	3
Hangu	4	3
Thal	6	3
Bannu	8	5
Tank	12	5

The North Western Railway gives no estimate of the loss occasioned to the railway by these short-circuiting services.

CHAPTER IV.—MOTOR TRANSPORT, ITS CONTROL AND REGULATION, AND SUGGESTIONS FOR THE FUTURE.

15. *Number of vehicles.*—We were unable in our rapid tour to obtain particulars regarding the number of motor vehicles in the Province as a whole, but we were informed that in Peshawar District there were, in 1931, 728 buses and lorries plying, of which probably 700 were usually available for use. This number was believed to be about the same in 1932.

16. *Rates of fare.*—The fare on metalled roads is said to be usually about 3 pies per passenger mile and on improved unmetalled roads, 4 pies. There is, however, a good deal of transport of wheat, maize, rice, gur, and oil seeds from villages to markets in motor buses or lorries—an unusual development compared with other parts of India—and to some extent passengers are picked up by goods vehicles at even lower " bargain " rates, thus overloading the vehicles and causing unnecessary damage to the roads. But it was said that on the whole the overloading of motor vehicles is not in the aggregate so damaging to roads as the bullock cart.

17. *General condition of the motor transport business.*—The general standard of motor buses is said to be low. Indeed with a rate of three pies per passenger-mile, which is below the economic level we believe, even with considerable overloading and regular employment, it could hardly be otherwise. Added to this there is the fact that there are for present needs an excess number of buses on the road and this results in periodic bursts of acute competition at wholly unremunerative rates with intervals during which transient bus unions control matters and ration the available business, so that an owner may get a trip every two or three days only; getting in neither case a reasonable return on his outlay. To some extent the tongas, for which Peshawar district is famous, have been put out of the business over even comparatively short leads but where tonga owners " unions " are strong they have managed to keep the buses out. There is no lack of enterprise in opening up new routes and, for example, when the Hathuan-Lundkhwar earth road was opened, three buses were bought by people in Lundkhwar and are now working on that road, but that particular road merely provides a link about four miles long between Lundkhwar and the metalled road. The extra buses must, therefore, compete on the metalled road system also, carrying passengers who would previously have walked to the metalled road and used a pre-existing bus.

18. *Future control.*—As far as we were able to ascertain—and our discussions were mostly in respect of conditions in Peshawar district—both official and non-official opinion favours some further measure of control in certain directions. At present the police staff is hardly adequate to control bus traffic and would require to be strengthened. Additional work is thrown upon controlling authorities, because the present low economic level of the business drives

it into the hands of irresponsible people of little or no substance who have every inducement to overload, are often impelled by competition to over-speed, and are unable to keep their buses in good order because of their hand to mouth existence. The first step might be to restrict the number of buses plying in any area or on any route to a reasonable number having regard to the traffic offering. Possibly separate licenses should be required for goods and passenger services, but this is a matter requiring consideration, because, so long as the service is safe and convenient and the vehicles reasonably clean, there is no great reason why a bus should not be used without the seats to carry usually inoffensive agricultural produce to market. If, however, dual purpose use is allowed, presumably there should be some restriction as to load of goods-plus-passengers and reasonable seating accommodation should be provided for the latter.

19. *Controlling authority.*—At present motor vehicles are registered at the headquarters of Government by the Inspector General of Police, but buses are licensed to ply for hire by districts. With any restriction of the number of licenses on routes traversing two districts, two authorities become concerned in licensing. Moreover annual re-registration at least is necessary for statistical purposes, and periodical inspection of buses is also essential. It would be to the convenience of owners if both were combined and registration and licensing were carried out locally but under the direction of one authority. We refer to this matter more fully in our general report.

CHAPTER V.—BRANCH LINE RAILWAY PROJECTS.

20. The following branch lines have been projected by the North Western Railway in the province:—

1. Charsada-Mardan-Swabi.
2. Havelian-Garhi Habibullah.
3. Bannu-Mirali.

(1) The first line has been surveyed but is likely to be unremunerative, and therefore its construction has been postponed. We were informed during our visit to Peshawar that the advent of motor transport renders the construction of this line unnecessary. Between Mardan and Swabi there is a road running parallel to the proposed line which will serve the traffic sufficiently well for the next few years. Between Charsada and Mardan there is a road carrying very heavy traffic and this we were informed will have to be improved. If this road is improved we consider that the needs of the area will be sufficiently met.

(2) *Havelian-Garhi Habibullah.*—The survey of this railway showed that its prospects were not likely to be remunerative and therefore the construction has been postponed. So far as local needs are concerned there is already a good road between Havelian *viâ* Mehsana to Garhi Habibullah. We are unable to state whether the construction of this line would be justified as an alternative route between British India and Kashmir.

(3) *Bannu-Mirali.*—This line has been surveyed but its construction has been postponed for the present. It is not within our province to suggest whether a road instead would serve the strategic purpose.

CHAPTER VI.—PROGRAMME OF FUTURE ROAD DEVELOPMENT.

21. *Need for local road development.*—In general it may be stated that in existing circumstances and until, *e.g.*, by schemes of irrigation the productivity of certain areas is increased, the Province is well served with railways and main roads. In Peshawar for instance the area in the average dependent upon one mile of metalled road is only about 7 square miles, and generally the need is for local road development to improve conditions of marketing and to enable the benefit of motor transport to be of wider application. The need is general and we have been told by the North Western Railway Administration that there are no specific feeder roads for which they would wish to press.

22. *Present programme.*—The local administration is already applying available resources and their share in the Central road development account to a scheme for the improvement of local roads by bridging and grading, and in Appendix 2 we reproduce some interesting notes on the small programme at present in progress given us by Lt.-Col. Wakely, C.R.E., Peshawar. We have no comments to offer but would venture to suggest that it is precisely this type of development worked out in this manner, that is most needed, and that a more extensive programme on these lines could be worked out as soon as there were prospects of funds being available.

CHAPTER VII.—SUMMARY.

Chapter 1.—Introductory.

(1) We were unfortunately only able to visit Peshawar and the Peshawar district.

Chapter II.—General condition of communications.

(2) As much as 94 per cent. of the milage of railways in the Province have metalled roads parallel and within ten miles; and 31½ per cent. of the milage of metalled roads is parallel with railways. (Para. 6.)

(3) In the area having a population density of 100 per square mile and over, 40 per cent. of the area is more than ten miles from a railway. (Para. 8.)

(4) There is a considerable milage of improved or motorable earth roads, and taking all motorable roads in three districts the extent of these in relation to area is only surpassed by the corresponding areas of Madras, Bombay and the Punjab. (Para. 9.)

(5) There has been considerable development recently in cheap reinforced concrete bridges. (Para. 10.)

(6) The general condition of metalled roads is good. (Para. 11.)

Chapter III.—The North Western Railway and competitive motor transport.

(7) The railway is losing perhaps some 1½ lakhs of rupees annually to competitive passenger buses (para. 13) and some 1·13 lakhs in parallel goods traffic besides some short-circuiting goods traffic. (Para. 14.)

Chapter IV.—Motor transport, its control and regulation and suggestions for the future.

(8) Passenger fares by bus are 3 pies to 4 pies per passenger-mile and sometimes lower. (Para. 16.)

(9) There are more buses on the stands than can earn a reasonable income, and this leads to various evils. (Para. 17.)

(10) We think that in future the number of buses should be restricted. (Para. 18.)

(11) Possibly registration and the issue of licenses could be controlled from one centre. (Para. 19.)

Chapter V.—Branch Line Railway Projects.

(12) The Charsada-Mardan-Swabi project is unlikely to be needed; the Havelian-Garhi Habibullah project cannot be justi-

fied on local considerations; and we are not concerned with the Bannu-Mirali project. (Para. 20.)

Chapter VI.—Programme of future road development.

(13) Main roads are well developed. Considerable development of rural feeder roads is desirable. There is a small programme for this in course of execution; and this could suitably be extended to the extent of funds available. (Paras. 21-22.)

APPENDIX 1.

Particulars regarding communications in the area having a density of population exceeding 100 per square mile, excluding Dera Ismail Khan and Kohat.

Area	7,231 square miles.
Population	1,914,739
Average density	265 per square mile.

	Length in miles.	Length per 100 Sq. miles of area.	Area per mile of road or railway. Sq. miles.	Persons per mile of road or railway.
1. Railways	232	3·20	31·30	8,270
2. Metalled roads	583	8·07	12·40	3,290
3. Improved or motorable unmetalled roads (fair weather).	256	..	..	..
4. Total motorable roads	839	11·60	8·60	2,280
5. Other unmetalled roads	756	..	..	..
6. Total all roads	1,595	22·00	4·50	1,200

The area more than 10 miles from any railway line is about 2,850 square miles or 40 per cent. of total.