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GOVERNMENT OF THE PUNJAB

MINISTRY OF AGRICULTURE

REPORT

16

ON THE OPERATIONS OF THE

PROVINCIAL BOARD OF COMMUNICATIONS

For the year 1921-22.

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Lahore :

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1922.

Report on the operations of the Provincial Board of Communications, Punjab, for the year ending 31st March 1922.

AT the commencement of the year the constitution of the Board was as follows :—

OFFICIAL MEMBERS.

The Hon'ble Lala HARKISHAN LAL, Bar.-at-Law,—
President.

Mr. A. S. MONTGOMERY, Chief Engineer, Punjab,
Buildings and Boads Branch.

Mr. H. W. M. IVES, C.I.E., M.L.C., Chief Engineer,
Punjab, Irrigation Branch.

Mr. F. A. HADOW, Agent, North-Western Railway.

Mr. C. A.-H. TOWNSEND, I.C.S., M.L.C., Director of
Agriculture, Punjab.

Mr. E. A. SCOTT, O.B.E., M.L.C., Director of Indus-
tries, Punjab.

NON-OFFICIAL MEMBERS.

Rai Bahadur GANGA RAM, C.I.E., M.V.O.

Rao Bahadur Chaudhri LAL CHAND, O.B.E., of
Rohtak.

Khan Bahadur Syed MEHDI SHAH, O.B.E., C.I.E.,
M.L.C., of Gojra.

Khan Bahadur Sheikh GHULAM SADIQ, of Amritsar.

Lala RATTAN CHAND, O.B.E., Honorary Magistrate,
Amritsar.

Syed MUHAMMAD HUSSAIN, M.L.C., Shergarh, Dis-
trict Montgomery.

Major W. GARFORTH, D.S.O., M.C., R.E.,—*Secretary.*

CO-OPTED.

Mr. G. T. POUND, Quarry Engineer, Punjab.

2. During the year the Board suffered the loss of one of its original members, Khan Bahadur Sheikh Ghulam Sadiq, of Amritsar, and there was one unfilled vacancy due to a previous casualty. The two vacancies thus resulting were filled by the appointment of Nawabzada Khan Abdulla

Khan, M.L.C., of Shergarh, Muzaffargarh District, and Sardar Harnam Singh, M.L.C., of Rawalpindi.

3. On the 11th November 1921, Mr. Mitchell, on return from leave, took up the appointment of Road Engineer and Secretary to the Board, relieving Major Garforth of the latter duties; and on 11th January 1922, Mr. G. T. Pound, Quarry Engineer, proceeded on leave, the duties of the Quarry Engineer being taken over by Mr. Mitchell in addition to his own duties, Mr. G. Gilbert, Assistant Engineer, being subsequently appointed as Assistant to Mr. Mitchell; this having been considered a more suitable arrangement than the definite separation of the functions of Road and Quarry Engineer. Mr. W. MacLachlan continued as Agricultural Tramway Engineer during the year.

4. Mr. Ives having retired from Government service, his place on the Board as Senior Chief Engineer, Irrigation, was taken by Mr. W. P. Sangster, C.I.E., and subsequently Mr. Foy, Chief Engineer, Construction, Sutlej Valley Project, was co-opted as was also the Chief Conservator of Forests, Mr. Grieve, and on his retirement, Mr. Gibson.

5. During the year under review the Board met eight times, there being in addition four meetings of various sub-committees.

6. *New Railways.*—If we exclude the consideration of communications to be provided in advance of colonization of new areas to be opened up by the Sutlej Valley Irrigation Scheme, the operations of the Board with respect to new railways have during the year under review been practically nil. Discussion between the Board, the Local Government, the Railway Board, and Messrs. Killick Nixon and Co., Bombay, on the question of the proposed Shahdara-Narowal Railway, continued in a desultory fashion. Messrs. Killick Nixon definitely stated their unwillingness to undertake construction of this line on less than seven per cent. guarantee, while the Railway Board was equally definite in its decision not to allow more than the six per cent. it had already offered. This six per cent. was to be made up as follows:—

Five per cent. by the Government of India,

One per cent. by the Local Government;

the latter being for a period of 10 years from the date of opening of the line only.

Sialkot-Narowal Railway Extension.

The hopes which were at one time entertained by the Board of interesting the local capitalist in this railway project and thereby educating him in the advantages of this form of investment, in connection with which various schemes and propaganda were prepared, had for the time being to be abandoned.

The Board also recommended the early construction of a line from Sirhind through Rupar to Nalagarh. At the commencement of the period to which this report refers the Railway Board had already decided that the survey of this line should be entrusted to the Patiala Darbar, and it was decided further that Rai Bahadur Rala Ram, Chief Engineer to the Darbar, should work in touch with the Irrigation Branch, as the alignment beyond Rupar would, it was thought, largely depend on the siting of the Irrigation quarries, from which an enormous quantity of stone will be taken for the Sutlej Valley Project. The Board of Communications has not further been consulted with respect to this project, but it understands that it is in advanced stage, and that various matters in connection therewith are being discussed by the Patiala Darbar, the Agent, North-Western Railway, and the Railway Board. In the meantime, however, the Irrigation Department finds itself unable to wait for the fruition of this project, and is providing its own line to serve the quarries at Nalagarh, on an old alignment from Doraha to Rupar and thence on a new one to Nalagarh.

Another line, once placed high on the list of railways required for the development of the Province, is that from Bhiwani to Rohtak, but it is probable that the construction of a line on the metre gauge by the Bikaner Darbar between Sadulpur, Bhiwani and Delhi, which has been recently under discussion, will render unnecessary for the present the construction of the line from Bhiwani to Rohtak.

With respect to new lines generally it will be seen that the Board has not been able to effect very much progress. The fact of the matter is that with the present high price of materials on one hand, and general industrial depression affecting traffic receipts on the other hand, there appear to be few prospective lines left for construction in the Province, which are likely to pay a dividend approximating to the rate of

Sirhind-Rupar-Nalagarh Railway.

Bhiwani-Rohtak Railway.

Prospects of New Projects.

interest at present obtainable in the money market. No project is at present mature for which capital can be raised in the open market, without guarantees of interest from the Provincial or Central Governments which exceed the limit up to which the Railway Board is prepared to go in this respect, even if money could be earmarked for the guarantees. The outlook, however, is more promising for the future; the price of rails has fallen very considerably during the past few months and the present harvest should see some fall in the price of food-grains, and therefore in labour rates, and be followed by an improvement in trade conditions generally. When the time comes the Board of Communications will be ready with sufficient well-discussed schemes to press on the attention of railway promoters.

7. *Other Railway matters.*—Unnecessary delays at level crossings were again discussed by the Board during the year under review and as a result the Agent, North-Western Railway, agreed to introduce complaint books at certain selected level crossings as an experiment. The result of this experiment is awaited.

The Railway Panchayats which the Board had previously decided to try at certain Goods stations had not been very successful; but it was decided to proceed with the experiment, Mr. Scott, Director of Industries, being asked to make a fresh start, which he has done; but no result can yet be reported.

8. *Inland Water Transport.*—The discussion on the appointment of an Engineer to investigate the possibilities of waterways in the Province for inland water transport proceeded during the year under review, Mr. Ives, Chief Engineer, Irrigation, being very strongly opposed to the appointment, and being emphatically of the opinion that it was waste of public funds to carry out any investigation. The Board decided, however, that *prima facie* it was inconceivable that no use whatsoever could be made for inland water transport, of the five rivers of the Province and of the Indus, apart from the use of those canals which were originally constructed with a view to navigation as well as irrigation, and that the investigation should be carried out by an expert whose opinion could be accepted as final, in order that the discussion might be settled once for all. Mr. Scott was asked to secure the

services of an expert for this purpose, but unfortunately no suitable individual could be found and the matter has had to be dropped. It is to be, hoped, however, that it will not finally be abandoned, as it seems probable that some use can be made of the really remarkable natural resources in waterways which the Province possesses. The waterways in North America and Northern Europe are in many instances closed to traffic by ice for many months in the year, but they are nevertheless very extensively used for all kinds of traffic. The rivers of Punjab possibly carry during the dry months of the year insufficient water to render navigation on a commercial scale possible, and below weirs and headworks are probably quite dry at times, but it does not follow that they are, therefore, useless as waterways. In fact, during the season when wheat is exported to Karachi the rivers have ample water. It should also be remembered that river transport in North America was started on a very small scale; timber for export was made up into rough boats and rafts constructed from commercial size scantlings. These were loaded with other produce and floated down to the seaport where the cargoes were transferred to ocean ships, and the boats were broken up and sold as timber.

A similar development would appear to be possible in the Punjab. Large quantities of timber could, it is believed, be exported to Mesopotamia, but the railway freight to Karachi is a serious obstacle; large quantities of grain, hides, etc., follow the same inland route, which suggests that a similar system might apply. As in many other directions it is probably necessary for Government to show that it can be done before private enterprise will come forward.

As regards canals, navigation and irrigation do not appear to thrive on the same channel, even on one designed to this end. A proposal has been made, however, which appears worthy of investigation, and that is that when the Sind Sagar Irrigation Project is taken in hand, a navigation canal fed from the same head works should be made through the centre of the area to be irrigated, giving access at the tail to the Indus, which at this place will probably always carry sufficient water to float large country boats. The water used will be only that required to make up evaporation and seepage losses, and those through locking boats back into the river.

9. *Timber rafting below Mangla.*—The Sub-Committee appointed to consider whether it is necessary to provide any alternative means of carrying timber between Mangla and Jhelum as a result of the reduction in the cold weather flow in the Jhelum below the Mangla Head Works, decided eventually that the timber interests had not proved their case that the construction of the Upper Jhelum Canal had resulted in any serious interruption to rafting, but that if found in the future to be necessary, arrangements could be made to carry timber on the canal railway between Sarai Alamgir and Mangla.

10. *Motor Vehicle Rules.*—The draft heavy motor vehicle rules mentioned in last year's report as having been submitted to Local Government were referred by it to the Legal Remembrancer who held that the Act of 1914 gave Government no powers to frame rules for the protection of road surfaces, and that fresh legislation would have to be undertaken. Before doing this the Local Government thought it advisable to refer the draft rules to the Government of India with a view to avoiding conflicting regulations in neighbouring Provinces. Up to the close of the year no reply had been received from the Government of India. In the meantime, however, very insistent demands had arisen from district authorities and others for more and stricter rules with regard to motor vehicles in general and in particular with regard to motor vehicles plying for hire. The existing rules were felt to be lacking in clarity and incomplete, and it was thought that a complete revision was necessary. As this would take some time, however, such rules as appeared to be immediately necessary, and to make which the Local Government had powers under the Act, were framed and issued; the file being transferred to the Communications Board by the Home Secretary with a view to that body undertaking a complete revision of rules affecting motor vehicles in the province. The Board appointed a sub-committee consisting of Mr. A. S. Montgomery, Mr. E. A. Scott, Rai Bahadur Ganga Ram and Mr. K. G. Mitchell as Secretary in January, but up to the close of the year the sub-committee had not met, the Secretary being engaged in collecting all necessary information with a view to putting the rules in order and making a complete fresh

Timber rafting on
River Jhelum.

Heavy Motor Vehicle
Rules.

Revision of General
Motor Vehicle Rules.

draft in the light of suggestions received, which will be placed before the sub-committee for consideration.

11. *Development of communications in Colonies.*—

Sutlej Valley Line. The sub-committee appointed to consider this matter could not arrive at a unanimous decision, the point of contention being whether the Sutlej Valley line should be re-made on the original alignment, or whether a new alignment should be selected; the arguments for the old alignment were that there was considerable capital tied up in it, that it could be resumed at once and was urgently required in connection with the Sutlej Valley project, while any alternative line would not only be burdened with the capital cost of the immoveable property on the old alignment, but owing to general difficulties might be delayed for years. The arguments against the old alignment were that the tract left between it and the Raewind-Khanewal line would be too wide to be served economically by the two lines which border it, and too narrow to allow of the construction of a parallel line between them, and that even if this central line were constructed the expense of working it and the Sutlej Valley line, *i.e.*, working two lines where one would suffice, would, if capitalised, outweigh the capital loss in abandoning the old Sutlej Valley line. The Board finally decided in favour of the old alignment from considerations of expediency. It was felt that the selection of a new alignment would result in very great delays before any railway at all were provided, while there was no obstacle to the relaying of the Sutlej Valley line on its original alignment, the rails having actually been ordered.

As regards rail communications in the tract between **Other New Colony Lines.** these two railway lines, three proposals were advanced—

(a) for a light type cheap broad gauge line from a point midway between Montgomery and Pakpattan to Kutabpur* on the Khanewal-Lodhran line;

* Subsequently altered to Jahanian in view of the sums expended by Government in developing that town.

(b) for a 2'-6" gauge railway on the same alignment; and

(c) for a system of agricultural tramways with its own backbone line again roughly on this alignment,

The Board decided that eventually a broad gauge line as proposed would probably pay, and that in the meantime a survey should be made and the land for it demarcated. Possibilities should be investigated, and if it was found that at present such a line would not pay, the tramway system could be proceeded with and its backbone constructed on the land taken up.

A line from Abohar or Bahawalnagar or Macleodganj to Khanpur running 30 or 40 miles south of the Southern Punjab Railway main line was considered a likely future development, but no immediate action in the matter was felt to be necessary. The Board, however, recorded its wish to be consulted in the matter again when the Bahawalpur Durbar was ready to commence operations.

Broad gauge chords, from Raewind or Changa Manga to Haveli or Basirpur and from Fazilka to Tandlianwala and on to Gojra were also mentioned as probable, but beyond intimating to the Irrigation Department that the weirs near Fazilka and Haveli should be designed with a view to carrying a broad gauge railway line the Board did not consider that the time had arrived to take any further action.

A preliminary reconnaissance survey has already been carried out by Mr. MacLachlan for the proposed tramway system and he is now to carry out the survey for the proposed broad gauge central line; so as regards rail communications the Board may be said to have the matter well in hand. The area to be colonised in British territory by the Sutlej Valley Irrigation project, generally referred to as the Nili Bar, contains a million acres of irrigable Government waste and the intention is to provide a model system of communications in advance of colonisation. At present only a rough preliminary scheme has been drawn up by the Secretary to the

New Colony Tramways.

Board as a first approximation of the probable cost, in connection with the Provincial Development loan. Assuming that the Central broad gauge line will be constructed with tramways to feed it, and that in view of the present financial difficulties of the Government of India the money for the broad gauge line will have to be found by the Local Government; taking an intensity of metalled and unmetalled roads per square mile of area approximately equivalent to that in colony areas which may be considered to be reasonably developed; and adding thereto a sum for the provision of accommodation for travel-

Other Communications.

lers and postal and telegraph facilities, a sum of two crores was arrived at as the capital expenditure necessary, a detail of which will be found at Appendix I. It is remarkable that this sum is identical with the figure suggested by Sir John Maynard two years ago (see pages 55-7 of the Sutlej Valley Project) which was amply justified by him. The Secretary of the Board is endeavouring to work out the scheme in greater detail and there is no time to lose: the development of this area affords a unique opportunity for scientific planning and every effort should be made to seize it. For instance, it may be assumed as certain that the unmetalled road of the future will have to be a great improvement on the present article. The chief requirement is water, and it will, therefore, be necessary to arrange as far as possible for roads to run along the boundaries of canal channels of various sizes. The alignment of roads naturally depends on the location of towns, railway stations, etc., and where these are fixed by certain considerations which cannot be ignored, it follows that the alignment of canal channels will, when possible, have to conform, a consideration which it is believed has not hitherto entered into the lay out of a large canal. Again if the elevator system is to be adopted it is obvious that here is an opportunity so to lay out the colony that a very large proportion of the wheat traffic will pass through the proposed elevators. A system of rural elevators serving groups of villages and connected with junction elevators on the railway by terminal tramways is suggested; it would incidentally go some way in simplifying and cheapening the tramway problem, as under it tramway traffic would be largely terminal. The problems are many and complex, and it should be realised that if communications in the colony are to be planned in a scientific manner and are not merely to be allowed to happen steps should be taken at once to clear the ground. This suggests firstly that Government should decide definitely as to whether it proposes to base this planning on the elevator system or on the old mandi system, and secondly that a colonisation officer should be appointed at once to collaborate with the Board and with the Irrigation Department. Attention is drawn to last year's report of the Board where it discussed this question. On page 4 it is noted that a sub-committee of the Board recommended the appointment of a Committee of Enquiry into the elevator question, which committee has not yet apparently taken shape.

12. *Agricultural Tramways.*—The proceedings of the Board at its meeting on April 4th, 1922, do not properly come within the scope of this report, but as with respect to tramways, the proceedings at this meeting mark a definite stage of advance they will be referred to.

The possibility of developing these Agricultural Tramways in various areas has been under investigation by the Agricultural Tramway Engineer, who, in addition to a rough scheme for the Nili Bar Colony, already referred to, had four schemes roughed out for tramway systems, two in the Lyallpur and Jhang districts, one in the area Amritsar, Ajnala, Lahore, Kasur, and one for Sakhi Sarwar. These were examined by a Sub-Committee of the Board which selected the former two as forming a suitable object for experiment, and called for the preparation of a fair project embodying both the schemes. This was prepared, duly examined by the Sub-Committee, and presented to the Board with a recommendation that the scheme should be proceeded with. The scheme consists of a system of 201 miles of 2'-6" Gauge tramway using 24 lb. rails, and connecting Jhang, Chiniot, Lyallpur, Jaranwala, Tandlianwala, Gojra, Toba Tek Singh, and Kamalia, at a cost of Rs. 27,450 per mile, or Rs. 55.17 lakhs in all, and is estimated to pay seven-and-a-half per cent. on the capital outlay.

The Sub-Committee reported a difference of opinion as to whether the scheme should be run by Government, or by private enterprise; the rival proposals are on the one hand that Government should raise the necessary capital as part of a general loan, and should construct and manage this system through a Board appointed '*ad hoc*'; and on the other hand that private enterprise should be allowed in by issuing definite share capital, with a guarantee of interest, management being in the hands of a Board appointed by Government as a '*quid pro quo*' for the guarantee.

The Board discovered the same difference of opinion, but was in favour of the latter scheme; it felt that the advantages to be derived from interesting local capital in these projects and of giving local investors the opportunity of sharing in the management of such a scheme outweigh the possible risk of mismanagement (should Government allow investors the preponderating voice on the Board). The

advocates of the former scheme hold that it is essential that this, the first such scheme, should be a success, and that the results of mismanagement will be so serious in bringing similar schemes into disfavour that even remote possibilities of this should be eliminated as far as possible.

The Board, after considering the various arguments advanced, held that though it favoured the introduction of the element of private enterprise, it was not so wedded to this as definitely to condemn the other. It felt that possibly the balance between the two might be swayed by considerations of financial expediency, and that, therefore, the rival avenues of progress should be examined by the financial advisers to Government. The scheme has therefore been referred to Government with this object, and there the matter stands for the present.

13. *Trunk Telephone Lines.*—Little progress has been made; of the eight lines recommended by the Board, three, *i.e.*, Lahore-Ambala, Delhi-Ambala, and Simla-Ambala, placed by the Board last on the list had already apparently been taken up when the Board made its proposals, but of the other five more urgent projects, that is Lahore-Lyallpur, Lahore-Ferozepore, Lahore-Montgomery-Multan, Lyallpur-Sargodha, Lyallpur-Multan, only one, that is Lahore to Lyallpur, was put on the waiting list by the Government of India. Later in the year, however, the Board was informed that owing to financial stringency the Government of India doubted very much its ability to construct even this one. The Board felt that having regard to the agricultural importance and prosperity of the Province, the inability of the Government of India to find the comparatively small amount of money needed (the Lyallpur line was estimated to cost Rs. 32,000) did not appear to be a sufficient reason for continuing to deprive the Province of much needed trunk telephones. It suggested, therefore, to the Local Government that, in the event of the Government of India continuing to be unable to find the necessary funds, the Local Government should be allowed to start its own lines, or to lend the Government of India the necessary capital. This proposal did not after discussion commend itself to the Local Government, but the Board is not allowing the matter to drop.

14. *Central Parks of Road Plant for the use of Local Bodies.*—In pursuance of the policy already decided on, the

Board towards the end of the year under review received two ten-ton steam rollers from England, and a scheme for hiring these out to local bodies was drawn up by the Secretary and approved by the President. It was felt that to prevent damage to this valuable plant by incompetent handling, and by the use of inferior lubricants, etc., the driver and fireman should be employed by the Communications Board, which would also supply lubricating oils and small stores. The cost of these, in addition to an allowance to cover interest, depreciation, and repairs being recovered from the local body. The actual debit from England for these rollers has not yet been received, but a fairly accurate estimate of their actual cost landed at Lahore has been made and a daily charge of Rs. 17 has been decided on. In arriving at this figure rates for interest (5 per cent.), depreciation (7 per cent.) and repairs ($4\frac{3}{4}$ per cent.) have been taken which are lower than strictly business principles would dictate, but even so there is a general feeling among District Boards that the charge is much too high, and at present neither of these has been hired out. On the one hand, District Boards are suffering from the universal complaint of poverty which has curtailed work and reduced the demand for plant; and, on the other hand, they appear to think it better finance to buy their own roller—and use it possibly for three months in the year only. Interest and depreciation accounts are not kept, so that the piling up during the year of overhead charges against the small amount of work performed is not realised. In view of this situation the Board is attempting to dispose of the further two rollers ordered from the Director-General of Stores, and will wait a little longer before deciding what to do with those it has. One possibility is to lend them free of interest, repair, and depreciation charges as supplementing cash grants-in-aid for approved projects.

15. *Financial statement.*—The statements of grants and expenditure for the year under review with explanatory notes will be found at Appendix II.

16. When the Road Engineer took up his duties a modest scheme of experiments on improved forms of road crusts was adopted. *Experiments.* Owing, however, to the delays in sanctioning the necessary staff no progress could be made with these.

16. *Road programme.*—The scheme contemplated by the President of the Board, and referred to in last year's

report, is embodied in a note by him which will be found at Appendix III. At this stage the Road Engineer took up the case shortly after assuming charge of his duties. The whole question is one of grave importance and no little complexity; even an ambitious scheme for the construction of new roads by borrowing capital and repaying the same with interest over a certain number of years involves a limited capital outlay which can be faced and met by various devices and expedients, but it is the maintenance of the system which in the long run bulks largest. In other words the problem is not so much what mileage of metalled roads the Province can afford to construct, but what it can maintain. An attempt was made to calculate the probable cost of maintenance of the system foreshadowed in the President's note, added to the roads we already have, and this was roughly estimated at about a crore-and-a-quarter from all sources against the present expenditure from revenue on roads (though not all on maintenance) of about rupees seventy lakhs. We are, however, at present at a point in road development in the Province where it is peculiarly difficult to calculate maintenance cost. On the one hand, it is felt by many that the cost of maintaining a metalled road is excessive, and that such a road is an expensive luxury; on the other hand, the claims of the unmetalled road can no longer be ignored, many of these must be improved and their maintenance seriously undertaken, a matter which has been entirely neglected in the past. The metalled road will possibly give way to some other form of improved road less costly to maintain, though more costly to construct. Thus the future will probably see a considerable increase of expenditure on the maintenance of earth roads, and a decrease on the cost of maintaining surfaced roads, so that at the moment it is difficult to reduce any road programme to rupees, which is an almost essential preliminary.

For the present then the question is being approached from another standpoint. A large map (8 miles to the inch) is being prepared showing all the roads, rivers, railways, and canals in the Province, in the States within its borders, and in neighbouring territories. This is a rather laborious matter, as no reliable map at present exists. When this has been completed it will possibly reveal many cases of duplication where roads run parallel to canals, and can be dispensed with on the separate alignment; it will also show places where by a small expenditure a gap in metalled roads

can be filled in providing through, if not direct, communication between important centres ; these will possibly be dealt with before any radically new trunk road alignments are taken up. In fact, the existing road system of the Province will be improved and linked up in a careful and conservative manner, whilst the problems as to the road of the future are being worked out. The earth road must not be neglected. Trunk roads connecting up the road system of the Province are undoubtedly necessary, but it does not follow that they need be 'metalled' throughout : in certain places the traffic for some time to come will be light, and a good earth road will suffice. These ideas are being translated into practice in the projects under consideration for prior treatment.

For instance, it has been proposed for some time to complete the Lahore-Khushab Road if loan funds are available. There is a gap of about ten miles in the metalling of this road between Sheikhpura and Chuharkana, and another of about twenty miles between Pindi Bhattian and Bhagtanwala ; the former it is now proposed to metal, and this will give through communication by metalled road from Lahore to Pindi Bhattian, sixty-five miles. Between Pindi Bhattian and Bhagtanwala, however, the situation is different, for one thing the nearest railway stations to this section are Sukheki and Sargodha, about fifty miles apart, and the carriage of stone will be a very costly item indeed : this is probably a case where some other form of surface can compete successfully with water-bound macadam. For the present, therefore, it is proposed to maintain this length as an earth road, this may be soft and even impassable for wheeled traffic during and after heavy rain, but so long as there is only a boat bridge over the Chenab on this road, which is all that will be financially possible for some years, and which will have to be dismantled while the river is in flood, there never will be much wheeled traffic during the rains on this section. Parts of this length are through good sound alluvial soil, which lends itself to earth road maintenance, and there is in addition a length of about three miles through heavy sand which will afford very useful experience in maintaining a sand clay or grass type road.

Again in pursuance of the gap-filling policy a rather more ambitious project is under consideration ; that is the metalling of the road from Sheikhpura to Lyallpur *via* Manawala and Shahkot. This length is about sixty miles

and will result in connecting Lyallpur with Lahore, and Amritsar, etc. Later by filling a small gap between Rodukoru and Samundri in the Lyallpur District through communication by metalled road, though not absolutely direct, will be extended to Gojra, and by filling up the gap between Gojra and Jhang, to Jhang (as Gojra, and Jhang will shortly be connected by tramway there will be little heavy traffic on this road which might, therefore, be maintained as an earth road).

It will thus be seen that while fully alive to the possibilities of other forms of road than those at present known in the Province, and the need, therefore, of proceeding cautiously with new schemes, at the moment, the Board is not by any means adopting a 'wait and see' policy, but is contemplating a cautious forward programme which only awaits money.

In this connection it may be mentioned that among the experiments which the Board is having carried out by the Road Engineer or encouraging others to take up are the following :—

A.—For Surfaced Roads—

- (1) Cement concrete, plain and reinforced.
- (2) The use of hard stones with no cementitious properties (Pathankote and Tughlakabad) for macadam, with the addition of artificial binding material—such as tar, bitumen, cement, grout, lime stone chips, or pea kankar.
- (3) Rut filling with hard stone and bitumen.
- (4) Asphalt (bitumen and local sand or silt).

B.—Earth Roads—

- (1) Sand clay roads.
- (2) Poned roads.
- (3) Use of road drag, road grader, etc.
- (4) Use of hygroscopic salts to keep earth roads moist.

Enquiries have also been made from the Attock Oil Company as to whether they can market any residual material likely to be useful as a road oil or bitumen, the Company has promised to look into the matter, but is not hopeful.

17, *Distribution of Grants to local bodies.*—Up to the time of the appointment of a whole-time officer as Road

Engineer and Secretary to the Board very little supervision could be exercised by the Board over the expenditure by local bodies of the grants made by it.

During the year under review the Road Engineer could only pay short visits to a limited number of districts, but even so it is apparent that matters at present are in a somewhat unsatisfactory state, and that there is room for improvement.

District Boards are generally unable at present to maintain the metalled roads they have, while in many cases they frankly admit to making little or no effort to look after the unmetalled roads. Nevertheless they continue to apply for and receive grants for new roads, leaving the future to take care of itself. The Board is watching the situation carefully, and has asked to be allowed to join in the work of overhauling District Board finances. It feels that it is peculiarly able to pronounce in an authoritative manner on the funds which District Boards should be able to earmark for road maintenance at the present time and for the near future, and that if the examination of resources of local bodies shows that it is impossible to provide for this expenditure, then it is for the Board of Communications to propose what shall be done, either in the direction of abandoning all fresh construction and even possibly roads already constructed, or of readjusting the financial burden between Provincial and local revenues.

18. *Communication by Air.*—No development of civil aviation has taken place in the Province in the year under review. The Board believes that the Local Government had at one time under consideration a proposal to run an air service between Lahore and Srinagar, but this Board was not consulted. When he eventually heard about the matter the Secretary addressed the individual concerned stating that the Board would be glad to hear details and possibly to help, but received no reply. Apparently the project was dropped owing to difficulties about the aerodrome at Lahore Cantonment which the promotor of the scheme wished to rent from the Royal Air Force.

19. The Board also dealt with many other matters coming within its scope which cannot be mentioned for want of space.

LAHORE :
June 1922.

K. G. MITCHELL,
Secretary, Communications Board, Punjab.

APPENDIX I.

Rough estimate of cost of providing Communications in the Nili Bar Colony in advance of colonization.

	Lakhs.
1. Light Type Broad Gauge Central Backbone Railway from half way between Montgomery and Pakpattan to Jahanian, 100 miles at Rs. 75,000 per mile (without rolling stock)	75
2. Herring-bone pattern Agricultural Tramway feeders to backbone, 20½ miles at Rs. 28,000 per mile ...	57
3. Metalled Roads, 80 miles, at Rs. 20,000 per mile ...	16
4. Earth Roads, 600 miles, at Rs. 5,000 per mile ...	30
5. Posts and Telegraphs—lump sum	20
6. Accommodation for travellers with wells—lump sum ...	10
Total ...	208
Say ...	200

N. B.—If the central backbone line is to be an agricultural tramway line, the estimate will be reduced to 165 lakhs.

The programme is spread over 6 years involving a maximum expenditure in any one year of forty lakhs or in the event of the tramway backbone thirty lakhs.

APPENDIX II.

Statement showing detail of expenditure incurred, and Grants-in aid allotted to District Boards, by the Communications Board, during 1921-22.

No.	Service Head.	Amount expended.		
		Rs.	A.	P.
1	Establishment, Contingencies and Traveling Allowance, &c.	20,395	12	5
2	Agricultural Tramway Engineer and his investigations.	32,500	0	0
	<i>Central Parks of Road Plant.</i>			
3	Purchase of two-ton Marshall Rollers ...	37,097	1	8
4	Colony Roads (For details see statement I to Annexure I)	4,00,000	0	0
5	Metalled Roads (See statement II.)	5,00,000	0	0
6	Miscellaneous---Experimental ...	28	0	6
	Total ...	9,90,020	14	7

N. B.—Owing to Accountant General's inability to supply correct figures for last year till the middle of October and as the report could no longer be delayed the figures given above are those which could be ascertained as far as possible in this office. Further owing to certain delays in getting the necessary staff required for Road Engineer sanctioned certain experiments such as experimental length of concrete roads, etc., for which estimates were sanctioned last year could not be carried out, hence little or no expenditure was incurred thereon.

ANNEXURE I.

I.—COLONY ROADS.

Statement showing the distribution of Grants-in-aid (of three lakhs) for Colony Roads to District Boards during 1921-22.

No.	Name of district or locality.	Name of Road.	Total cost of project.	Grant-in-aid applied for.	Grant allotted by Communications Board.	REMARKS.
<i>Multan Division.</i>			Rs.	Rs.	Rs.	
1	Lyalpur ...	Metalling Lyallpur-Jaranwala Road ...	2,41,812	1,20,000	60,000	
2	Montgomery ...	Metalling Montgomery-Akpatan Road...	...	65,000	...	This sum, which was made over to Commissioner, Multan Division, last year, is reported as lapsed, and the Communications Board has been asked to reallocate this year To be distributed by Commissioner.
3	Ditto ...	Metalling the following roads :—				
		(1) Okara-Dipalpur	94,962	2,40,000	
		(2) Renala-Shergarh ...	...	35,753	
		(3) Montgomery-Kaureshah ...	...	66,067	
		(4) Chichawatni-Sheikh Fazil ...	...	52,965	
		(5) Okara-Gugera ...	...	1,10,308	
		(6) Montgomery-Katorwala ...	...	15,705	
		(7) Montgomery-Kabir ...	...	86,764	
		(8) Okara-satghara ...	...	70,992	
				Total ...	3,10,000	
<i>Rawalpindi Division.</i>						
1	Shahpur ...	Metalling Kot Moman-Laliani Road ...	76,000	85,957	1,00,000	To be distributed by Commissioner. Nothing to be given for No. 3.
2	Do. ...	Raising and metalling Sargodha-Sahiwal Road.	95,100			
3	Do. ...	Metalling Khushab-Narewala Road ...	1,34,100	67,050		
4	Gujrat ...	Raising and metalling road from Baha-ud-Din to Phalia.	1,92,126	50,000		
5	Do. ...	Constructing new katcha road from Rukan to Kuthala Sui Khan.	24,805	24,000		
6	Do. ...	Constructing new katcha road from Rukan to Miara Gondal.	28,631	26,000		
7	Do. ...	Raising, metalling and bridging the road from Kunjah to Phalia <i>via</i> Mangowal.	3,26,834	1,50,000		
				GRAND TOTAL	4,00,000	A sum of rupees one lakh has been transferred to Colony grant from the sum of rupees six lakhs provided for metalled roads during 1921-22.

II.—METALLED ROADS.

Statement showing the distribution of Grants-in-aid (of six lakhs) for Metalled Roads in charge of District Boards, during 1921-22.

No.	Name of district or locality.	Name of Road.	Total cost of project.	Grant-in-aid applied for.	Grant allotted by Communications Board.	REMARKS.
<i>Lahore Division.</i>			Rs.	Rs.	Rs.	
1	Amritsar ...	Re-construction of that portion of the Amritsar-Pathankot Road which lies between Kathunangal-Janitipur.	86,858	50,658	77,000	
2	Gujranwala	Gujranwala-Hafizabad Road ...	...	40,000	20,000	
3	Sheikhupura	Renovation of the Sheikhupura-Chubarkana Road.	54,600	27,000	27,000	
		Total ...	...	...	<u>1,24,000</u>	
<i>Multan Division.</i>						
1	Multan ...	Metalling the Khanewal-Kabirwala Road ...	49,727	49,000	30,000	
2	Jhang ...	Renewing top coat of Kot Khuda Yar-Chiniot Road, 8 miles, and sealing coat under 3 miles in addition to top coat.	50,000	50,000	30,000	
3	Muzaffargarh	Renewal of 5 miles of Muzaffargarh-Khanagarh Road.	...	40,000	20,000	
		Total ...	...	...	<u>80,000</u>	
<i>Rawalpindi Division.</i>						
1	Jhelum ...	Jhelum-Gatalian Road (about 6 miles) ...	41,809	41,809	10,000	
2	Rawalpindi	Metalling Sihala-Kabuta Road (5 miles) ...	22,498	20,000	20,000	
3	Attock ...	Repairs of portion of Tarnan-Khushalgarh Road from the boundary of the Attock District to Fatehjang.	11,832	11,832	6,000	
4	Do. ...	Constructing a second class cart road from Injra Station to Jand-Makwad Road (4 miles).	1,959	1,959	1,000	

5	Do. ...	Constructing a road from Tallagang to Mial	12,626	12,626	6,000	
6	Gujrat ...	Constructing a bridge in mile 3 of the Gujrat-Jalalpur Road.	9,835	4,917	5,000	
		Total ...	...	...	48,000	
		<i>Jullundur Division.</i>				
1	Ferozepore	Metalling Ferozepur-Muktsar Road vid Faridkot and Kot Kapura.	2,03,761	1,40,000	50,000	The grant allotted by Communications Board must be spent on branch from Kot Kapura to Muktsar.
2	Do. ...	Metalling Abohar-Fazilka Road ...	3,95,436	1,00,000	30,000	
3	Jullundur ...	Metalling the following roads:—				
		(1) Nakodar-Phillour ...				
		(2) Jullundur Nurmahal ...				
		(3) Phillour-Rahon ...				
		(4) Nakodar-Mehatpur ...	3,20,000	3,20,000	33,000	
		(5) Malsian-Shahkot ...				
		(6) Kothar-Shamchurasi ...				
		(7) Nawashahr-Balachaur ...				
		(8) Adampur-Kartarpur ...				
		Total ...	...	...	1,13,000	
		<i>Ambala Division.</i>				
1	Gurgaon ...	Metalling Sobana-Rewari Road ...	2,74,000	2,74,000	50,000	
2	Ambala ...	Metalling Ambala-Naraingarh Road ...	2,61,444	40,000	20,000	
3	Hissar ...	Metalling Hansi-Mehm Road ...	1,25,000	30,000	15,000	
4	Rohtak ...	Metalling remaining portion of Rohtak-Kharkhauda Road.	83,458	83,458	50,000	
		Total ...	...	...	1,35,000	
						Rs.
						Amount provided by Government ... 6,00,000
						Amount distributed to District Boards by Communications Board ... 5,00,000
					1,00,000	
						Amount transferred to Colony Road ... 1,00,000
		GRAND TOTAL ...	...	...	5,00,000	Balance held in reserve ... Nil.

APPENDIX III.

COMMUNICATIONS BOARD, PUNJAB.

Road Programme.

THE inception of the Communications Board was, I think, with the idea of improving the road communications in the province. So far as at present advised I do not think the Board has been able to accomplish much in this direction. On reference to the old proceedings I find that the matter of improvement of road communication was discussed as a general plan and policy in the 1st, 2nd, 6th and 7th meetings of the Communications Board during the last year and in the first meeting of this year.

2. The Board seems to have arrived at the following conclusions :—

- (i) That a programme of 700 miles be kept in view.
- (ii) That the cost of these 700 miles be met partly from borrowed money.
- (iii) That the new roads be up to the standard of the existing trunk roads.
- (iv) That the existing trunk roads be strengthened in places.
- (v) That the road from Lahore to Pathankot be improved.
- (vi) That on the existing roads bridges should be strengthened with a view to the heavier loads expected on account of a probable increase in motor traffic.
- (vii) That rules for regulating heavy motor traffic be framed and introduced.

3. Since my taking over the Presidentship of this Board several applications for extension of road facilities have been made to me verbally : several applications have come to the Board and questions have been asked with regard to other road requirements in the Council. It seems to me that the people of the province have begun to feel the necessity of more roads and of good roads : and, therefore, the Communications Board is expected to lay down a policy and programme of road extensions and make early plans to carry out that programme and policy. The main questions to consider are—

- (a) From what sources should the cost of constructing new road and improving existing ones be met.
- (b) What arrangements should be made for supervision and supply of metal.

It may be noted that the Government is at present spending several lakhs of rupees annually on new roads and on the maintenance of the existing roads directly and by contributions to the local bodies. These sums are now being charged to Revenue : and in the Budget of 1921-22

I find the following items sanctioned by the Council for roads, maintenance, improvements and construction :—

	Rs.
1. Repairs and maintenance of provincial roads	25,70,000
2. Original works and improvements to provincial roads	... 13,79,200
3. Bridges and metalled roads	... 6,00,000
4. Colony roads	... 3, 0,000
	<hr style="width: 10%; margin: 0 auto;"/>
Total	... 48,49,200
	<hr style="width: 10%; margin: 0 auto;"/>

4. One has to remember that just at this juncture the revenues of the province are hardly sufficient to make two ends meet and any further demand on the revenues for opening up communications would be inadvisable and futile. The proposal to finance road construction partly from loans has already been considered and approved by the Communications Board. To me it appears that the roads, especially the new roads, may be viewed from three standpoints :—

- (1) Grand trunk roads, which, in addition to opening up of the country, will have the merit of being regarded as permanent or perpetual roads.
- (2) Minor roads which may serve a district or two adjoining districts for a long period but should not be classed as permanent roads being liable to change after a number of years with the change in the conditions of the country.
- (3) Small local roads which may change with the modes of cultivation and the supply of water from canals, rivers, tube wells and so forth, and may be connecting links between prominent villages and small towns on one side and the railway stations and the main roads on the other.

5. I think the Communications Board should lay down the following principles for financing these roads :—

- (a) Roads of the first class to be constructed entirely out of loan capital ; the interest and the cost of maintenance to be revenue charges. Roughly these trunk roads may be put down at 1,000 miles, costing about $3\frac{1}{2}$ crores, to be completed, within the next 15 years. Thus at the end of 15 years the cost of maintenance of these 1,000 miles at about Rs. 2,500 a mile, with interest on the average of, say, $5\frac{1}{2}$ per cent. to be something in the neighbourhood of 39 lakhs a year.
- (b) The second class of roads should be District Board roads, also constructed with borrowed capital. The building programme should be concluded within 20 years, and the capital repayed

from the 1st to the 40th year; the programme to be made after consulting the District Boards concerned. The interest on the capital and the cost of maintenance should be met from District Board revenues and from the 21st to the 40th year the instalments on loans also to be met from the District Board revenues.

- (c) The cost of third class roads should be met from the District Board revenues.

NOTE to clause (a) above.—If this programme is carefully prepared and the most urgent roads are taken in hand at first the Communications Board and the Council will have full opportunities of revising, suspending, or stopping the programme if they find, at a later stage, that the revenues should not be further burdened or on account of other cogent reasons. I think this loan would be in the nature of a permanent loan on the Province. These trunk roads would be provincial.

6. In laying down a programme, say, for the next 10 years of the first and second class roads the existing canal bank roads ought to be taken into consideration: and, where possible, some arrangement should be made with the Irrigation Department to open up those roads to public traffic and so to avoid duplication of roads.

7. The roads of the first class should be metalled similarly to the existing trunk roads. The roads of the second class would be partly *kacha* and partly *pakka*: and the roads of the third class would be mostly *kacha*, but may be made *pakka* in some cases where an important town is to be linked to the railway or a trunk road and extensive traffic is expected.

8. The points for the consideration and decision of the Board are the following:—

- (i) The policy of building trunk roads with borrowed capital and laying down of a programme at present, say, for 5 years.
- (ii) The opening up of new quarries for supplying metal, and making arrangements with the Railway authorities for carrying this metal to the points required.
- (iii) Requesting the Public Works Department to undertake the construction of these trunk roads or making them on the basis of large contracts, say, in portions of something like 100 miles to be contracted for at one time.
- (iv) Assisting the District Boards in arriving at a definite programme, say, for the next 7 to 10 years and inducing them to build their new main roads from borrowed capital and taking steps to settle the policy whether the District Board loans should be arranged through the Local Government or independently.
- (v) Inducing the District Boards to have competent establishment to build these roads under competent supervision and, if possible, to ask them to place their Engineering staff under the supervision of the existing Public Works Department.

ment, Superintending or Executive Engineers, or under a new officer to be appointed for the purpose by the Communications Board or the Public Works Department.

9. One point I have omitted from this note and that is the roads within municipal limits and within notified areas. The Communications Board might assist the municipalities with advice and may from time to time draw their attention to the advisability of improving and extending their roads on the principles laid down for local bodies in this note.

10. From the funds now placed at the disposal of the Communications Board for distribution and to be hereafter similarly placed the weaker District Boards may be assisted by way of contributions to meet part of interest and part cost of maintenance.


HARKISHAN LAL,

Minister for Agriculture—22-7-21.

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