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ADDRESS

OF

Mr. LINES,

PRESIDENT.

April 1926.

YOUR EXCELLENCY AND GENTLEMEN.—I wish first of all, on behalf of the Council and Members of this Congress, to express the keen pleasure we all feel that His Excellency has honoured us with his presence here to-day. The recognition of the work of the service here represented, and of the Punjab Engineering Congress itself, which is implied by His Excellency's acceptance of our invitation, will always be an inspiration for us.

I also heartily welcome on behalf of the Congress, the many officials of the Punjab Government and other visitors, whose presence here shows an interest in our work which is very gratifying.

Gentlemen, as you know, you last year elected Colonel Cowie as your President, but he was transferred to Madras a few months ago, and your Council did me the honour to ask me to take his place. Like Colonel Cowie, I also am a Railway Engineer, and I have been looking up the papers read at this Congress to see whether we Railway Engineers have been keeping our end up at our annual meetings. I find that, during the last six years, about one-sixth of the papers accepted by the Congress were by Railway Engineers. This would, at first sight, indicate that we are not taking much interest in the Congress, or are not fulfilling our duty to brother engineers by imparting our experiences and acquired knowledge in the form of Professional papers, but this is not the reason for the paucity of railway papers. The truth is that for some years new railway construction in this part of the world has been practically at a standstill, so there was not much of interest to write about. So far as I can judge, any railway engineer who has had the good fortune to do any interesting construction work during the last six years has written a paper for this Congress. I have wished to put this before you, because I know there is a feeling abroad that we have not been playing up as we should.

In other branches, on the other hand, especially the Irrigation Branch, progress has been continuous, and there are great works in hand at the present moment, involving new methods, and labour-saving appliances not before used in this part of the world.

Work on the Sutlej Valley Project is forging ahead, a further stage having been marked by the laying of ceremonial stones at the Ferozepur Weir and the Bikaner (Gang) Canal by His Excellency and by His Highness the Maharaja of Bikaner.

The River Sutlej was successfully turned through the cut to Weir at Suleimanke, which was baptized by a big flood a few months later.

Work on the Islam Weir was continued throughout the season with the help of electrically driven pumps, and preliminary work was begun on the Panjnad Weir.

A great deal of the excavation of the canals is being done by drag-line excavators, and progress is being made in the stupendous task of lining 80 miles of Bikaner Canal with concrete.

The new areas to be brought under irrigation will require railways to carry away the produce, and surveys for these are now being made.

Apart from construction works and new projects, the chief development has been in the direction of combatting water-logging by drains dug with drag-line excavators, and by the installation of pumping plant at various sites. Much attention has been given also to the more efficient control and distribution of supplies, by the installation of broad-crested weir meters on Branches, as well as upon distributaries, and the increased use of scientifically designed modules. Both these subjects have been much before the Congress in recent years, a fact which has undoubtedly assisted in their development. A module, as my friend Sir Ganga Ram has told us at one of these meetings, is a diabolical machine for depriving the poor zamindar of a little surplus water.

Equally interesting is the development of scientific observations and research, strongly advocated by the Congress for the last 12 years or so. Activities in this direction include the establishment of a Committee of two for the investigation of the water-logging problem, one of the members being an Engineer of the Irrigation Branch, and the other, their Scientific Research Officer.

The Buildings and Roads Branch of the P. W. D. have a large and comprehensive scheme of road construction in hand, linking up the headquarters of all districts in the Province as well as opening up tracts hitherto inaccessible.

Another section of the P. W. D. is undertaking the largest Hydro-Electric Project in Northern India. This great Mandi Hydro-Electric Scheme is divided up into stages. The completion of the first stage, which is now being undertaken, will enable power to be supplied to towns from Lyallpur on the west to Ludhiana on the east. When the ultimate stage has been completed, power will be available for towns as far south as Ghaziabad, Meerut and Delhi, and as far North as Sialkot and Gujranwala. The great use of electrical machinery in the towns affected by the scheme will require the creation of an army of skilled mistries for repair work, especially at first, I should think, when many machines will be damaged by unskilful usage. This is a matter properly left to private enterprise, and will give great opportunities to young Punjabis who have the courage to take an electrical course and go through shops in England,

to set up electrical business in this country. It would be a great pity, if this trade were seized by Bengalis, who have got the start of us owing to the large use of electricity in Calcutta.

To get up the heavy plant for this scheme, a railway is being built 100 miles long, from Pathankot through Kangra, Palampur and Baijnath. This railway will open out the beautiful Kangra Valley which, but for the scheme, would probably not have been linked up for many years. For varied and beautiful scenery, this line will, I think, be found equal to anything in India. There is a lot of heavy and difficult work in it. We shall, I hope, run an observation car at the end of the train, so that passengers can enjoy the view in comfort.

Non-official engineering works have been few, but I must not omit to mention the Ganga Hydro-electric Lift Irrigation Scheme at Renala, which Sir Ganga Ram's enterprise has carried through.

The stagnation in railway construction which has existed for so long has, thanks to His Excellency's support, come at last to an end, and we look forward to a quite respectable programme of extensions during the next few years. The improved prospect before us is the result of a broader view of the creed, that a work must pay for itself. Proposals for irrigation schemes, or for railways, must be remunerative. The canal engineer must show that the profits he expects from his business as a seller of water will pay for his works, and the railway man must in like manner show a profit as a carrier.

Roads are treated from a different aspect altogether. Their construction and maintenance is charged against Public Funds, and their use is free to the public, though conveyances are not provided. Yet they also must be justified by showing that they will pay. The profit obtained from a road consists in the increased prosperity accruing to the locality served by it.

Now the present railway position in the Punjab is, that all main lines have been built, all the most fertile regions tapped, but there still remain regions which ought to have improved railway facilities. We find, however, that even with the cheapest form of construction it is difficult to get from many of these proposed new lines the profit as carriers necessa y to cover all the interest and maintenance and transportation charges.

Railways, like roads, also bring increased prosperity, but we are not supposed to take this into account when making out a justification for a new line. The idea has been so outside our methods that nowhere in the considerable literature on the subject of traffic estimates and so on can I find any means suggested of estimating it.

If railways were treated like roads our earnings would only have to cover our transportation charges and it would be easy enough to make these new railways pay. I do not suggest such a course, but am merely indicating the difference in financial treatment of these two means of communication—roads and railways.

The Government of India has recently ruled that new Railway Projects which cannot be financially justified in the usual way may be built if the Local Government is willing to guarantee a sufficient sum to cover the anticipated annual deficit. This ruling adheres to the commercial method of justification so far as the Railway Department is concerned and at the same time permits us to take in hand those railways which are necessary and justifiable from the broader view of the prosperity of the country. Thanks to His Excellency's support we are now on this new basis commencing construction once more, and are surveying or have marked down for survey as soon as staff is available, some 700 miles of new lines in the Punjab. The first two lines to be constructed will be from Narowal to Shahdara, and from Narowal to Amritsar. Not all of the proposed new lines will require a guarantee, in fact I hope that many of them will not.

As I said before, our experts do not show any method of calculating the probable increase of wealth to a locality by the construction of a railway, but I have no doubt the information could be dug out of the various statistics if we can find the suitable line of enquiry. If we can show the greater value of land near a line of railway, a greater density of population, a greater wealth per head, we could show by actual figures what a new railway would be worth to the Local Government. We could then make out a nice little account, for instance—

To Sangla Hill-Khushab Railway Project.

Dr.	Cr.
Earnings required to cover interest, maintenance and working.	Item A.—Expected takings by railway as carriers. Item B.—Annual value of expected increased wealth of the district.

Then if the credit side of this account exceeds the debtor side, the railway is worth building. The terms A and B on the credit side will probably be found to bear a fairly constant proportion to one another in a given district, so that after a little experience is gained we shall after finding A be able to write down B without detailed investigation.

You will see from the programme that we have a very interesting series of papers before us for discussion at this meeting. There are 8 papers, and it will be all we can do to get through them. I will not read out the names of the papers and their authors, as they are shown in the programme which you all have, and I have taken up too much of your time already.

SPEECH

BY

H. E. Sir MALCOLM HAILEY, K.C.S.I.,

GOVERNOR OF THE PUNJAB.

I need not tell you how great a pleasure it is to me once again to attend your annual Congress meeting; your work is of paramount importance to the Province, and I am confident that the subjects which you will deliberate and the papers which you will consider will be of the highest value to that work. It is perhaps a commonplace, when I say that the engineer really comes into his own, only when financial conditions and social development give him the openings necessary for the exercise of his skill and enterprise. Now, I am not at the moment prepared to assert that we have in the last two or three years seen such an increase in general prosperity, or have improved general resources to such an extent, that the private capitalist can make a general call on the engineer for his assistance. There is still depression in trade, and the stringency which accompanies this depression; though there seem to be signs of a gradual if slow revival. On the other hand, the hopes which I held out last year that the finances of Government and the Local bodies would be so far improved that there would be wider scope for the work of the engineer are being to some extent fulfilled. You will not expect me to disclose to you our budget nor to deal here at length with the finances of the Province. But I can safely say that we are now able to contemplate developments in more than one Department which will give scope to the ingenuity of the engineer. The public is always suspicious, and perhaps rightly suspicious, of what is known as a "brick and mortar" policy; but our policy is not of that description. It extends over a very wide sphere, and, if it involves the erection of a number of buildings, they are only required as a corollary to development of many other kinds. We are not one of those Governments which concentrate their energies on the development of headquarter institutions or the embellishment of our capital. Our policy has been to lay the foundation for advance of every kind throughout the Province; educational advance, progress in agriculture, expanse in communications and medical relief. Here of course the work of the engineer is required; but beyond this we are doing much which belongs to his own particular sphere and Province. Thus we hope in April next that Lord Irwin will commence his career in the East by opening the Headworks at Suleimanke. That great Project is making rapid progress. We shall, I hope, be able to allot part of the land for cultivation in the course of the next year. I have every confidence that under the guidance of Mr. Foy and his successor (for unfortunately Mr. Foy is retiring) we shall see the whole scheme brought to a rapid completion. In irrigation

again, we have seen the completion of the interesting enterprise at Renala which we owe to the courage and skill of Sir Ganga Ram ; it constitutes in some way a new departure in Hydro-electric Irrigation, for he has managed to secure a high volume of power with a low fall—a matter of great importance to us, for it has proved the possibility of irrigating on a large scale areas which seemed at one time designed to remain outside the sphere of Irrigation. His success has encouraged us to develop another important scheme ; the irrigation of a large area of land situated in Pind Dadan Khan by means of power developed from the Upper Jhelum Canal. We propose by means of this power to pump seepage water on to land which is at present rapidly going out of cultivation.

Let me take another sphere of activity, that of communications. It is unnecessary for me to emphasize the importance of improving communications in this Province. I visit at times districts which have a depressed and unhappy air about them. They tell me that there is something wrong with the Administration. I believe there is nothing wrong with the Administration, but that the depression is due to the fact that they are shut off from the world and are denied those means of social intercourse which is so essential to the advancement of every community, and further to the lack of communication which prevents them from reaping the full benefit of their labour as agriculturalists. It is indeed of little advantage that we should extend means of education to the agriculturalist and at the same time endeavour to educate him in better methods of cultivation, unless we can provide him with adequate means of transport to the market. I do not think it is generally realized that the provision of access adds immediately a very handsome percentage to the receipts of the cultivator equivalent to an increased outturn per acre of his land. We have of recent years adopted a wide and progressive programme. A few years ago we took stock of the position ; that the Province was then maintaining about 1,200 miles of metalled road. We decided to reclassify our roads and place under Provincial charge all those which could be described as "arterial" and give help to Local bodies to maintain other roads. The result has been that the Province has assumed charge of some 600 extra miles of metalled road and we are providing annually for the extension of this mileage by some 60 to 80 miles a year. The first result will be seen in the improvement of the existing roads, of which many were in grievous need when we took them over, but the public will soon see a substantial extension of their length. I think there is something which appeals to the imagination when the Punjab takes in hand a road from Delhi to Loralai, or commences a new communication which will allow of motor traffic between the capital and Multan ; but that is what we are doing. It is unfortunate that there are many districts in which the cost of road material is almost prohibitive, and it is on such a subject that the deliberations of your Congress may be of particular value. I am glad to see that the Ministry has entered upon a series of experiments in road construction, and it would be of the

utmost value to the Province if we can find some way of building roads which, although they may cost somewhat more in their initial outlay, nevertheless ensure a saving in their maintenance.

You, Sir, have referred to another aspect of transport, I mean, railway communications. I am entirely with you in believing that it is to the interest of the Province to recognize that in many cases the net gain cannot be measured by the actual returns. It is in recognition of this fact that the Local Government has welcomed the new policy of the Railway Board which contemplates the expansion of Railways under Provincial guarantees. As an illustration, let me refer to the figures of a recent venture to which you have referred, the Shahdara-Narowal Railway. Here we were so convinced of the necessity of communication that we proposed to construct either a road or a tramway at our own cost. That would have meant building a road of some 49 miles in length which, apart from interest on its capital cost, would have involved at least half a lakh a year in maintenance. We proposed that the Railway Board should consider as an alternative the building of what I may describe as a "third grade line." For I may say that with many others I have always believed that there were areas in this country which demanded something less than what may be termed a standard line, namely, a line of a low grade of construction but suitable for that somewhat slower type of transport which is needed by an agricultural community. I am glad to say that the Railway Board has accepted the proposal, and it has done so on terms which involve a guarantee that is entirely acceptable to us, for it is far less than the cost which would be involved in the maintenance of a road. I foresee other developments of the same kind in the immediate future, and I do not think that the Railway Board will find that we are slow to provide guarantees if they can be obtained on similar advantageous terms. Our difficulty in the Punjab lies in the fact that our main railways run in one direction, namely, from the Province towards the great ports. We are deficient in cross-connections and in those feeder lines which will provide means of transport to purely agricultural areas. It is such connections that we require; but from the point of view of railway administration alone they will not return the same income as the main lines already in existence. But they will be of such benefit to us and to our people that we are justified in going beyond the strict terms of a debit and credit account, and in meeting from Provincial Revenues some of the deficiency in revenue returns.

Then again, we have in the course of the past year developed activities in other lines of great interest to engineers. You have referred to the enquiry which we have set on foot in regard to water-logging. That is a problem of the greatest difficulty and at the same time of the greatest importance to us. On the scientific side it involves many factors which have hitherto been insufficiently explored. On the practical side we find that in spite of the efforts of the Irrigation Department by opening drains and otherwise that the damage is still increasing. To say the least, this has filled us with very great anxiety, and we have decided that we

must undertake a scientific enquiry which would help us not only to ascertain the actual amount of damage already done, but to forecast as far as possible the extent to which we may expect that seepage and water-logging will reach in future, and at the same time to explore all remedies possible for checking its progress. Then again, we have undertaken an activity somewhat akin to that just mentioned, in the institution of what is known as the Rural Sanitary Board. We have found that apart from any water-logging that has been caused by our irrigation systems, much damage has been done not only to cultivation but to the health of the Province by the blocking of natural lines of drainage. We have therefore instituted a separate organization for dealing with them, and the considerable expenditure which we have undertaken has already begun to show promise of the best results. The Board is at the same time charged with work which should also prove of great interest to the engineer, I mean, the development of storage facilities in sub-montane areas. Those who have travelled in the Central Provinces will have seen the great use which has been made of storage reservoirs there, and although our rainfall may be less favourable, yet we may hope that activity in this direction will give to many other districts the benefits which are already being secured to certain areas in Gurgaon.

I have been able to touch and to touch briefly only, on a few of the activities of the last year which are likely to prove of interest to your Congress and will give fresh scope for the work of the engineer. But I hope that I have shown that we are not only determined on advance but that we are able to provide in some measure the means to secure it. The determination is there, I hope that our resources will continue to improve, and it would be as great a gratification to us, as I know it would be to you, if we could see ourselves established in a financial position enabling us to give the fullest and the widest scope to the energies of gentlemen of your profession, which have proved of such incalculable benefit to the Province in the past, and of which we are in such urgent need if we are to secure the development for which we all hope in the future.