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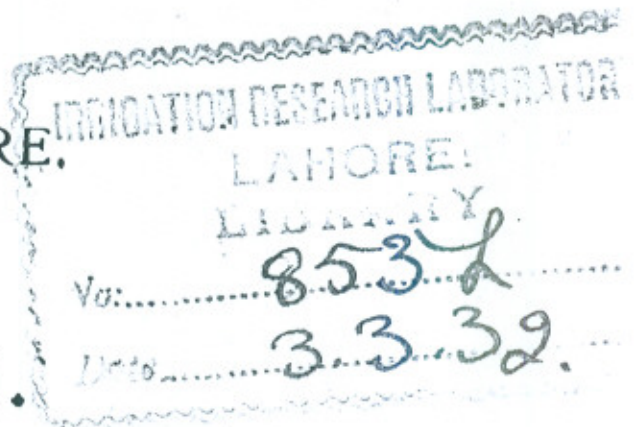
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# Punjab Engineering Congress.

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ADDRESS  
OF  
Mr. F. T. BATES,  
PRESIDENT.

April 1921.

YOUR EXCELLENCY AND GENTLEMEN,—I have the honour of opening the 9th Annual Congress of Punjab Engineers.

Before proceeding with the business of the day I beg to express on behalf of this Congress the keen sense of pleasure afforded us by the presence here to-day of His Excellency Sir Edward Maclagan and of the Hon'ble Members and Ministers of Council.

We welcome too most heartily all our visitors. Their interest in our proceedings will always be an inspiration to us and will help forward the great work of the public services represented here to-day. We are aware of and take this earliest opportunity of acknowledging the benefits accruing to the Public Works Department from the sister Departments of Agriculture, Health, Sanitation and Industries.

We offer a special welcome also to Members of the Boards of Communications and Drainage.

GENTLEMEN,—The present year has seen the introduction of far reaching changes in the administration of this country. The people of each province are now largely responsible for the efficient conduct of public works within their boundaries, and it is no small satisfaction to us to feel that whereas formerly we worked as it were single handed, we are now backed by the most intelligent and progressive of the many nationalities working out their destinies here. We feel assured that this province, which has proved its right to be considered the mainstay of this country in times of war, will gradually rise to take an equally exalted place in times of peace.

GENTLEMEN,—Under the stimulus of the great war immense efforts are being made throughout India to advance with matters chiefly commercial and industrial affecting the prosperity of this country. The people of each province are busy marking out or their own advancement the lines on which they are to proceed.



The lines on which this province must proceed are not difficult to determine. Its great rivers, vast plains and sturdy peasantry have marked it out as an agricultural province first and foremost, and statistics show that at least 70 per cent. of the population are at present employed in cultivating the land.

It is therefore necessary to see how our public works stand to-day in relation to the agricultural position, and ascertain what possibilities of extension there are and how best to achieve them.

GENTLEMEN,—The agricultural position to-day is one which the people of this province can view with pride.

Out of 68,000 square miles of culturable land 30,000 square miles are commanded by canals. And out of 19 million acres of net area cropped in the British districts of the province in 1918-19, 8½ million acres, or more than 44 per cent., were canal irrigated. But the index of progress does not lie alone in the area irrigated, it lies too in the value of the crops raised. The value of the 8½ million acres of crops is estimated at 52 crores of rupees. The crop value per acre has increased considerably in the last few years, and now stands at an average of 60 rupees.

This, however, is not all that can be said of the agricultural position as it is to-day. The value of crops raised in 1918-19, *viz.*, 52 crores of rupees, could not have come about but for the fact that the crops were successfully marketed, and, more than that it was improved to suit the needs of buyers. The province possesses not only its canals, but the great system of roads and railways, without which the value of its crops would fall to insignificance. It possesses too the following essentials in any great scheme of agricultural activity, *viz.*, co-operative banks for the relief of agricultural indebtedness, agricultural colleges, schools and training farms, cattle and horse-breeding farms, and markets for the ready sale of produce, and will shortly have an added need in the shape of grain elevators for the preservation and marketing of wheat, the principal crop. Then again to ensure that both the land on which so much depends, and the people who are on it are maintained in efficient condition, the province possesses Drainage and Sanitary Boards of Control. It will thus be seen that people of this province have had laid for them the best foundations possible for their future progress.



GENTLEMEN,—I shall now pass on to a consideration of the possibilities of advancement and how best to achieve them. As to the possibility of increasing the area under canals, there are four large schemes already threshed out which when completed will add another 7 million acres of annual irrigation producing crops valued at another 42 crores of rupees. The achievement of these schemes lies principally in providing the funds and labour for their execution. We look to the people to concentrate their efforts towards helping on these schemes with men and money to the best of their ability.

These schemes do not, however, anything like exhaust the possibilities under agriculture. There are vast areas of cultivable waste lands in the province waiting to be brought under cultivation, and there are equally vast areas of land under well irrigation that can be largely improved. It should not be impossible with our increased knowledge of deep tube wells and soils and crops to take in hand and place on a far better footing than now the whole of the areas coming under the above description.

Then again there are the waste lands of the rivers. It is computed that the reclamation of river waste lands would increase the area suitable for plantations and grazing by a thousand square miles. The rivers at present permitted to take an annual toll from the inhabitants of many thousands of acres of cultivable land along their banks. Land subject to flood is insecure and rents uncertain. All this can be changed if river reclamation works are steadily carried out. There are great possibilities attaching to successful reclamation. Besides plantations for fuel and new grazing lands there would be on the river banks plantations of special grasses suitable for rope and paper manufacture. These and others industries would be created, and the river side lands would provide occupation and livelihood for many thousands of the population.

The successful achievement of cultivating the waste lands of the province, improving the output of wells, and reclaiming river waste lands would, I think, be assured if a special branch of the Public Works Department were created to deal with this phase of progress and advancement in the province.

GENTLEMEN,—These remarks I think cover the main possibilities under the head of agriculture.

The possibilities under industries are also great. Statistics show that about 20 per cent. of the entire population are engaged



in industries of which cloth-making secures the largest number. Besides this there are now springing up numerous factories, and soon there will be in this province from one source and another a large available supply of electrical energy to take the place of steam power thus cheapening many industries at present unable to make headway. The achievement of success in the use of electrical energy depends largely on the knowledge of its use, and my special object in including mention of it here is to say that the technical institutions of the province should provide a more practical training in electrical science than has been done so far. Electrical energy will come more and more into use in every department of Public Works, and as the training of hands for its use is a long one, it seems desirable to lay stress on the need for making an early beginning.

Mention should not be omitted here of the great Sutlej Hydro-electric Scheme, which, when aided by the Bhakra Dam will place at the disposal of the industrial concerns of the province over three hundred thousand horse-power at favourable cost. These figures alone indicate the immense field that will be opened up for employment of persons suitably trained in the use of electricity.

I referred a little while ago to the close interdependence of canals, roads and railways and stated that but for these means of communications the crop value per acre would fall to insignificance. I wish to emphasize the point as the people for whom all these works are built are apt to attach to them separate spheres of utility. The canal extensions I have indicated as requiring to be pushed on will need simultaneously the extension of roads and railways. In the North-Western Railway system the principal carrier of produce in the province, the people possess one of the largest systems in the world. Its open line exceeds 5,000 miles, and it has carried in 12 months no less than 58 million passengers and 13 million tons of goods. It gives employment to 106,000 persons. Its gross earnings amount to 14 crores a year and its working expenses to 7½ crores. The State roads in the province which help to get field produce to the railways exceed 25,000 miles of which over 3,000 miles are metalled. It is for the people to see that their roads and their railways are not starved of funds, but are amply supplied so as to obtain through them the best value possible for the crops raised.

The questions requiring consideration for improving the efficiency of our roads and railways are varied and complex, and



for their solution call for the most careful study. The people of this province may depend upon it that those in whose hands the future of these great public works lies will see to it that the interests of the people came first in whatever policy is proposed. The Communications Board is already busy with schemes of roads, tramways and waterways ; while as to our railways the Railway Commission with the help of the best brains of the Railway service is at present engaged in devising means for making a great and efficient service even more so.

GENTLEMEN,—Let me now pass on to introduce to you briefly the papers sent in for discussion at this meeting. In doing so let me say that they are welcome contributions to the subjects of which they treat.

There is no scourge following on canal irrigation more to be dreaded than that of waterlogging and I am sure that though we may not always find ourselves in complete agreement with the views of the authors of papers dealing with this subject we are still glad to have them and will apply to them all the attention they deserve.

The paper contributed by Major Wyman on the erection and operation of sliding forms in grain elevator construction is particularly appropriate at the present time not only is the scheme of grain elevator construction in the Punjab likely to be a big one in the very near future, but ferro-concrete buildings of all descriptions will follow on the cheap output of cement in this country, and Major Wyman's paper will go far towards acquainting builders of this class of structures with the best methods peculiar to them.

GENTLEMEN,—In closing my address may I claim the privilege as your President on this occasion of suggesting certain subjects for papers for future Congress meetings ? The subjects are those which I think you will admit are of some importance. There are three that are uppermost in my mind, *viz.*—

- (1) The introduction of mechanical appliances to meet the increasing deficiency in manual labour in this country. We have arrived at a stage at which, unless machines are introduced, we shall be brought to a stand still on large works of urgency.
- (2) The second subject is the most suitable utilization of the energy available at canal falls. I think



that with the greater familiarity growing up round us of things electrical, we should bestir ourselves to see that available power, wherever found, is suitably harnessed to do some useful work.

- (3) The third subject is that of a cheap form of building construction for small dwellings. There appeared recently in one of the engineering papers a method of pressed clay construction for walls in small buildings. It seems to me that pressed clay, or clay strengthened in some way to stand increased pressure, offers a wide field for the builder of small dwellings, and investigations into the possibilities would amply repay the cost and trouble taken.

There are many thousands of workmen requiring to be housed near their works, and a solution to the question of how to run up cheap, yet permanent, dwellings is one which has so far not been found.

GENTLEMEN,—We rejoice to think that in the prosecution of the great works before us—works destined to play so great a part in the well-being and advancement of his people and province—we may hope to have the personal guidance of His Excellency and the close association of the people themselves through their representatives here to-day.