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R. B. B. P. VARMA
President 1939-40

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PRESIDENTIAL ADDRESS.

THE PUNJAB ENGINEERING CONGRESS SESSION 1940.

By

R. B. B. P. Varma.

SIR SUNDAR SINGH MAJITHIA, GENTLEMEN & BROTHER ENGINEERS.

I esteem it a great privilege to extend on behalf of the Punjab Engineering Congress as well as myself a hearty welcome to all the distinguished visitors. I assure you of our heartiest appreciation of the interest you have displayed in our activities by being present here to-day. To our brother Engineers from outside this Province, we feel equally honoured by their coming to take part in our professional discussions. We will thus gain advantage of their wide experience of the difficulties encountered, and overcome on works in their Provinces.

India is a vast country and every Province has its own engineering problems quite different from ours and requiring different methods of treatment. It is hardly five weeks when we had the Institution of Engineers (India) in our midst here. All the Provinces and important Indian States were represented in that annual gathering and we came to know some peculiar problems facing the Engineers in the design and construction of their works—problems which we had never dreamt off while dealing with our works in this Province. Our Congress is a provincial body and as such deals with the problems and works of this Province only. I, however, trust that some of these problems will interest the Engineers working in other Provinces and that they will carry back pleasant memories of our difficulties and our efforts to deal and tackle with them.

During the year under review, the results of the activities of the various Branches of the Punjab P. W. D.,

would be judged from the following important works tackled by them.

IRRIGATION BRANCH.

Research Work.

Punjab Irrigation Engineers have always been alive to the importance of research work in Hydraulic problems, and many interesting and useful experiments have been successfully carried out by them during the past 50 years. However, for the last 12 years or so their activities in this direction have been growing fast and it appears that they have fully realised the bearing and importance of the results of those researches. As a proof, some of these results now form the basis of the present day improvements in the design and construction of our irrigation works. The Irrigation Department has now got a well-equipped Research Institute attached to it and very useful work is being done there for all the Engineering Departments of the Province. It was only the other day that the Punjab Government sent two officers to America to study the design and construction of High Dams in connection with our own schemes of constructing Dams on the Sutlej and Beas Rivers for providing irrigation to the famine-stricken areas situated in the south-east of the Punjab. These officers left India in April and returned at the end of October. A High Dam Circle has been opened with effect from 30th October 1939 to investigate alternative Dam sites and to revise the 1919 Sutlej Dam Project. The preparation of designs and estimates in this connection is in progress.

Western Jumna Canal Head Regulator.

The remodelling of the Head Regulator has been taken up during the year 1939-40. The existing Head Regulator has a large number of small spans, 6 feet each, fitted with old type gates which are very difficult to work. The remodelling consists of providing 23 feet spans and fixing new type of gates. An interesting feature of the design is that in order to keep out shingle

the crest has been advanced a little and on this crest a cantilever platform of wooden sleepers is being constructed. It is considered that this will be a cheap and useful method of keeping out shingle and the replacements of individual sleepers will be easy in case any damage is done—whereas if a concrete platform were to be constructed strong protection would have had to be provided against the impact of heavy trees and boulders. It is expected that the remodelling will be completed by the end of this year.

Western Jumna Kharif Extension Scheme.

A scheme is being surveyed for carrying 800 cusecs to certain Arid areas of the Hissar and Rohtak Districts through the Western Jumna Canal. In remodelling the Head Regulator of the Canal, provision has been made for this extra discharge. The remodelling of the Canal itself and the Main Line Lower and the branches lower down is being carried out and will be spread over 4 to 5 years. The reaches requiring immediate remodelling in order to enable additional supplies to be run have been taken up during the current year. These supplies will be run only when surplus supply is available in the river during the flood season.

Model Experiments for the Beas Training Works.

The Beas Training Works are maintained on the left bank of the river to prevent it from shifting into the Western Bein Drainage, because this would cause very serious damage to the Kapurthala State, to the North Western Railway and certain areas of the Punjab. These works are subscribed equally by these three parties. The river has been moving more and more to the south and opposite village Kalewal, it is not possible to retire the embankment and the training works any further, as the river has moved quite close to the Western Bein. It has, therefore, been decided that armoured spurs should be constructed to keep the river in check. Model experiments have been completed at Malikpur giving the length and spacing of the spurs and the construction has been taken in hand.

Central Workshops.

The re-organisation of the Central Workshops at Amritsar which was started in 1937-38 has continued during the last year. This had become necessary in order to cope with the increased normal requirements as well as the extraordinarily heavy work to be done in record time for the Emerson Barrage. Several new machines have been obtained to meet the present day requirements and to replace the old ones. The Shops have a large foundry, and are now equipped with Overhead Cranes and machines for all types of steel work which may be required not only in this Province but the whole of India. The Shops are now capable of executing big and small jobs at very reasonable rates in open competition with other experienced firms in India, and have been receiving contracts for works from other Provinces and the Military Department.

Drains.

Drainage Construction continues to figure prominently in the activities of the Irrigation Branch. An extensive net work of Branch Drains is in progress in the Rechna Doab and two of the main outfalls, *viz.*, the Marh-Chiniot and Rechna have been enlarged during the year.

The problem of reclaiming land deteriorated by harmful salts is receiving special attention and although reclamation on large estates with a single owner has been in progress for a few years, it was not until April 1939 that reclamation of small peasant proprietary holdings was taken up. The site selected for this was in four villages in the Lower Chenab Canal near Sukheke. The cultivators have welcomed the measure with unusual enthusiasm and have co-operated in carrying out orders as regards crop rotation, distribution of water, etc. It is hoped that an extension of land reclamation to other areas will soon be made.

Tube Wells.

The Karol Tube Well Project near Lahore has shown good progress during the year and eight tube wells of 1½ cusecs capacity each are now supplying irrigation water to cultivators for areas under orchards, vegetable gardens and fodder. Situated as it is, near Lahore, there is a very keen demand for such irrigation in preference to that from open wells operated by bullocks. Much valuable information has also been collected which will prove useful for Tube Wells Project in other parts of the Province.

Ferozepore Weir.

As a result of settlement of upstream floor in one of the bays of Ferozepore Weir and readings of pressure pipes hollows were feared to exist under the downstream floor. To prevent depletion of the sub-soil, it was decided to drive a line of sheet piles 12 feet long, at the end of the *pacca* floor and also to thicken the floor in Bays No. 13 to 29 to resist increased pressure. The work was started during December 1939 and is now nearing completion.

Public Health Branch.

During the year 1939, the Public Health Circle, P. W. D., Punjab, has taken up a work of great importance for the Lahore Town and its suburbs. The Lahore Sewerage Scheme, as it is called, has been estimated to cost about 2½ crores. Construction was started on main sewers on McLeod Road, Abbott Road and Durand and other roads while spun concrete pipes, 57 inches diameter for the outfall sewer were placed under manufacture.

The town water supply schemes of Panipat and Pir Mahal were completed and extensions of water supply works at Ambala, Bhiwani, Rohtak, Lahore, Sialkot, Ludhiana, Abohar and other towns were in hand. New schemes of water supply for the towns of Burewala and Pind Dadan Khan have been commenced. Work was

also carried out on a considerable number of rural water-supply schemes.

The Bit Ilaqua rural water supply scheme, in Hoshiarpur District, estimated to cost over Rs. 6 lakhs, was commenced. This involves the provision of a high pressure pumping plant of about 300 H. P. to deliver water from the Soan River into reservoirs on the Bit Plateau, against about 1000 feet head, whence the water will be delivered through an extensive net work of distribution pipe lines to serve the various villages in an arid and waterless region.

B. & R. Branch.

The Buildings and Roads Branch has continued zealously and vigorously to push forward with its road development programme and by the end of the financial year 1939-40, not only will some 700 miles of District Board roads have been provincialised and re-metalled but about 200 miles of unmetalled roads will also have been metalled. Thus in the Province, there will be 3700 miles of metalled and tarred roads and 1793 miles of unmetalled roads maintained by this Branch. In addition to the above lengths of roads, there will be 650 miles metalled and 6939 miles of unmetalled roads in the Province, which are being maintained by the various District Boards.

With the rapid development of motor and lorry traffic between the larger and more important towns of the Province, the widening of the metalled width, improving of curves and removing of blind corners have proved an absolute necessity both from an economic point of view and to avoid accidents. This excellent work is being carried on year by year in a systematic manner and a great deal has been done in this direction on the Grand Trunk Road between Lahore and Jullundur and between Lahore and Gujranwala and also on other Arterial Roads which radiate from Lahore. During the year, the construction of bridges on the Sohan River at Dhok Pathan in the Attock

District and at Fordwah, Siddiqia and Pakpattan Canals at Suleimanke in the Montgomery District have been taken in hand. In the following financial year 1940-41, road works of the value of about 12 lakhs will be executed.

While efforts are enthusiastically being made to extend communications by metalled roads throughout the Province, the B. & R. Branch is also undertaking research and experimental work with a view to use local and indigenous materials and thus secure economy in expenditure on road construction. In the Punjab Irrigation Research Laboratory and in the field, experiments, on the stabilization of earth roads with molasses and other materials, are being made and the durability of cement concrete roads and tracks is being tried out and tested with a view to exploring means of curtailing the cost of maintenance.

Two residences for the Hon'ble Ministers and a new residence for the Chief Secretary have been constructed on the G. O. R. Estate at Lahore. The building of the Punjab Public Library was also commenced and completed during the year.

Important Engineering works carried out in the Northern Circle, P. W. D., N. W. F. Province, during 1939 are as below :—

1. Legislative Council Chamber at Peshawar.

The building was designed by Mr. Sullivan, the Consulting Architect to the Punjab Government, and was constructed at an estimated cost of Rs. 3,39,000. It was completed in the spring of 1939 and was opened by H. E. the Governor in May 1939.

2. Residential Quarters for Civil Clerks at Peshawar.

The scheme has been designed to accommodate 285 Civil Clerks employed by the Provincial Government in Peshawar. The estimated cost of the work is Rs. 8,05,000. The quarters are arranged in a small colony and have a separate water supply system, roads,

gardens, playing grounds, etc. Most of the quarters were completed and occupied late in 1939.

3. Residential Bungalows for Civil Officers in Peshawar.

18 new residential bungalows of a modern type were constructed at an estimated cost of Rs. 5,04,000.

4. X-Ray Block in the Lady Reading Hospital at Peshawar.

This modern addition to the Hospital was constructed at an estimated cost of 39,700 to accommodate the X-Ray equipment, etc.

5. Dadar Sanatorium, Hazara District.

A Sanitorium has been constructed at Dadar (Hazara District) at a cost of Rs. 1,84,000 to accommodate 72 patients.

In addition to the above, two bridges, called (*i*) Gulabad and (*ii*) Nagoman, were completed during 1939. Their foundations were carried down to 60 feet below the bed of the rivers through shingle and boulders. These were designed and constructed by Messrs. Braithwaite Burn and Jessop Construction Co., and the training works by the P. W. Department.

Railway Branch.

The N. W. Railway is carrying out important and useful work on "Renewing 17 spans, 100 ft. each of the Victoria Bridge over River Jhelum near Malakwal." The bridge is being regirdered to carry modern heavy loads. As the Punjab Government did not agree to contribute towards the cost of a roadway for public traffic over the bridge, the new spans have been designed and fabricated in such a way, that a roadway can, if required, be provided on the top deck at a future date.

The same department has also constructed a "New Hospital with staff quarters at Lahore." It provides accommodation for 75 indoor patients, an out-patient department, an operating theatre, an X-Ray room and other modern requirements for the Medical Branch includ-

ing staff quarters. The work has already been completed and the hospital brought into use.

"Renewal of Rail and Roadway spans of the Chenab Bridge at Sher Shah" is intended to be carried out next year. The scheme is estimated to cost 27½ lakhs including provision for a roadway for public traffic.

Electricity Branch.

In the P. W. D. Electricity Branch, the Projects Section was engaged during the greater part of 1939 in preparing designs and specifications for a steam turbo-alternator power station which it is proposed to erect at Lahore to assist the Hydro-Electric generating station at Jogindernagar to carry the load of the Branch's system during the low water season which occurs in winter.

During 1939, the maximum demand on the generating plant at Shanan rose to 13,900 K.Ws. as compared with 13,400 K. Ws. in 1938 and the total connected load on the system increased by 3,500 K.Ws. making a total connected load of approximately 35,500 K.Ws.

The number of consumers increased by approximately 2,200 making a total of approximately 19,200 consumers.

Before I conclude, I wish to record on behalf of this Congress our deep regrets on the deaths of R. B. Pt. Chandar Bhan, Superintending Engineer, Punjab Irrigation and Rai Sahib Lal Chand, Retired Executive Engineer, both members of this Congress.

I also desire on behalf of the Congress to congratulate the following members for the honours conferred on them during the year :—

Mr. D. A. Howell on his O. B. E.,

Mr. J. M. Macintyre on his M. B. E., and

Syed Ismail Hussain on his title of Khan Sahib.

I will now ask Sir Sundar Singh Majithia to be pleased to declare the Congress open.

SPEECH

BY

The Hon'ble Sardar Bahadur

Sardar Sir Sundar Singh Majithia, C. I. E.,

Minister of Revenue, Punjab.

Note.—An exact copy of the Hon'ble Minister's speech could not be kept and therefore a summary of the same is given below :—

Sir Sunder Singh Majithia said : When I was young and reading in school, the only railway line that passed near Amritsar at that time was the main railway from Delhi side to Lahore. It was also at that time that the railway line to Pathankot was being built, and I remember that whenever we heard a whistle of an engine passing near our house we, as young lads, used to run to see the train passing the road crossing alongside our house. Now it is an ordinary thing, but for a young boy of about nine or ten years of age it was a sight to see the steam horse pulling a train which could never be forgotten.

We have now a network of railways in the province ably managed by my friend Colonel Carson with his vast and efficient staff of subordinates, many of whom are engineers of great skill, who must have built great railway bridges and spanned many great canals and rivers of the province. We have got now the facility of air-conditioned carriages, and I have no doubt that the lots of the travelling public, with this amenity of life, would be made easy under the efficient management of the N.-W.R., which is one of the greatest carriers, taking our produce from one place to the other and thus adding to the disposal of the raw products of the zamindars and the commodities of the trading community.

ROADS

I remember that in the Punjab we used to have only *kacha* roads. Then we had the roads metalled with *kankar*, which was considered to be a great boon at that time. This reminds me of my journeys from Majitha to Amritsar in my father's big muledrawn carriage, and where the poor mules were unable to pull the carriage through the sandy road we had to get down and push the old *gari* out from the sandy road near Amritsar.

In the Punjab now, which has got the best system of roads, that nuisance of dust has greatly been done away with by the skill of our engineers in the buildings and roads branch. We are now widening our roads and in the near future, I hope, the nuisance of dust will be comparatively insignificant.

Sanitation in our big towns, I am afraid, is not what it should be. We notice in Lahore diggings going on for the great sewerage scheme which the municipality is carrying out. When it is finished, I hope, it will provide the facility of sanitary conditions to the congested area of Lahore and also in the civil lines. Sanitary installations are springing up in the recently built houses of very good up-to-date designs. Thanks to the energy and skill of our ex-Consulting Architect, Mr. Sullivan, and the present Architect, Mr. Shroff, the appearance of Lahore has been changed.

THE ZAMINDAR

How I wish this facility, which is available to big towns, may also be available in the villages and the lot of inhabitants of those parts also improved, because it is they that bear the greatest burden of the taxation in the province in the shape of land revenue and *Abiana*. I think the time has come when a zamindar could claim, and rightly too, that these amenities which have been enjoyed by his fortunate town brethren should also be made available to him. He pays for the piper and he must call the tune, and it is the duty of the Government to see that he gets

also his legitimate share of the amenities of life which are available to the town people.

The evil of waterlogging is such that if we cannot tackle it successfully the loss to the province would be colossal. I know that, besides the lining of canals, the system of drains and sub-drains is also another remedy to meet this evil, but like our other canals it is absolutely necessary that these drains should be in an efficient running condition. That means that where we spend money to keep our canals running efficiently, we have to provide funds for these drains to be kept in a good running condition.

"We have another problem to deal with in the province, and that is the threatened damage to our canal colonies and other places where the evil of *thur* is appearing and making large areas of fertile land uneconomic; and if this evil is not checked, they will become useless. Where we find in our canal colonies fertile lands producing good crops of cotton and wheat in abundance and providing necessary means of living to nearly 80 to 90 per cent. of our population in the province, we have to see that the evil of *thur* is successfully tackled if these flourishing colonies of ours, which are the great granaries of our province, are to be saved.

BARRAGES

The building of barrages across our great rivers has practically come to an end, as after the construction of the Thal Project there would not be any more headworks to be built. So this means that we have to find other methods of meeting the great demand for water. We have schemes at Bhakra in the Bilaspur State on the Sutlej and at Balehu on the Beas river which are being explored, and I have no doubt that the storage of water in these areas by building dams, which is being tackled by your engineers, will very soon be accomplished. We sent to America two of our best engineers, Mr. Khosla and Mr. Kanwar Sain, to

study on the spot the system of dam building in that country, and I am glad to say that they have come back after a successful tour in the United States of America and brought with them material which will be very useful in the construction of our dams in future.

"If an old man could have the privilege of offering a piece of advice, I think I may say that it will afford me very great pleasure to find that our engineers mix freely with the people and bear their grievances and troubles, not as officers sitting at their desks, but as servants of the people in whose service our energies and endeavours must be spent.