The Central Board of Irrigation in India.*

THE *Annual Report* of the Central Board of Irrigation for 1935–36, which was recently issued is the second of its kind published by the Board since it was established in November 1930 During the last six years of its existence the Board has extended its activities in many directions and has helped the Government and the public in many ways We cannot do better than quote the following from the speech delivered by His Excellency the Viceroy at the opening of the Proceedings of the Board s Annual Meeting on 31st December 1936

' The Board and the Bureau have done work of the utmost value in the brief six years since their establishment in November 1930 The Board has provided several sub committees to investigate important technical problems, not the least important of which has been the Committee on the Distribution of the Waters of the Indus and its Tributaries The recommendations of that Committee are still under consideration, in consultation with the Local Government and the States concerned but I am glad to be able to say that there is every hope that a solution of this very complex and thorny question will be found along the lines proposed by the Committee

' The Bureau has built up a valuable library of publications at the moment numbering more than 4000 The importance of an authoritative Reference Library of this character and on this scale needs no emphasis from me The Board has too established contact with all the important irrigating countries of the world and it includes in the range of its association engineering institutions societies colleges and eminent engineers in many different countries I feel confident that as time passes this Institution will prove itself in an increasingly marked degree a clearing house of the first importance for information on irrigation matters not only in India but in all countries where irrigation is of any importance

Apart from the annual meeting which is generally held in November every year the Research Committee of the Board meets every year in June or July and considers the research activities of the various irrigation research institutions maintained by Provincial Governments The present publication gives in outline, the different lines of research work carried out by these institutions We shall here refer briefly to the most important of these —

Bombay Presidency

Researches on irrigation problems are carried out by the ' Irrigation Research Division " Poona [1]

1 *Experiments with a model of the Ganges and the Hardinge Bridge on the Eastern Bengal Railway* — This bridge spanning the River Ganges near Paksey on the Eastern Bengal Railway was constructed between 1910 and 1915 In September 1933 after floods when the discharge had reached 17 lakhs cusecs the Right Guide Bank was severely attacked and breached These experiments were set up to investigate the cause of these breaches and to suggest means of averting them in future

2 *Fall Experiment* — Different types of falls have been tried and their relative efficiencies found

3 *Silt Control at Offtakes from Alluvial Rivers—Experiment with a Model of the Nara River at Mithrao (Sind)* — On the control of silt entering the head works of a canal system depends largely the success of that system These experiments will prove of great use for the design of head works on alluvial rivers

This station is also doing experiments on soil research

Punjab

Irrigation researches here are conducted by the Director, Irrigation Research, who has, besides the well equipped laboratories at Lahore a number of research stations spread all over the Province One of the outstanding works of this Institute in the year under review is mentioned in the following resolution of the Board

Resolution This Board accepts the recommendation of the Research Committee to the effect that the draft publication entitled Design of Weirs on Permeable foundations by R B A N Khosla Dr N K Bose and Dr F McKenzie Taylor be issued as a Board Publication

Prevention of Seepage from Canals — Experiments are being carried out here for the production of impermeability in the bed of a channel by chemical means It is claimed that the treatment of small length of channels with sodium carbonate has reduced their permeability by 50 per cent

Problem of Silt Movement and Design of Channels — It appears that the silt that moves on the bed of a channel is now recognised as one of the hydraulic data of the channel such as the discharge, hydraulic mean depth or the slope This is a move in the right direction and it is stated that as a consequence of the work done at Lahore, regime relationships have been developed and it is now possible to introduce silt into the formulæ and record the silt as in the case of other hydraulic data

A series of interesting experiments have been carried out on the determination of the chemical composition of the various river silts and their possible influence on soil fertility It has been found that none of the Punjab river silts contains very much nitrogen phosphate or potash and therefore they cannot be regarded as direct fertilisers

This conclusion seems to be different from those that are reported to have been experienced from the Ganges or Nile silt

United Provinces

Laboratory research on irrigation problems seems to have started here in the year under

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* Annual Report of the Work of the Central Board of Irrigation India 1935–36," Manager of Publications New Delhi 1937 p 138

[1] This hydrodynamic research station is no longer run by the Bombay Government. It is now under the control of the Government of India. Mr C C Inglis is the present Director

review—a small flume in which experiments on model of the Sarda Barrage at Banbassa and the Deoha Barrage at Duni was conducted to devise the form of protection for down stream scour

Problems of seepage loss from canals and experiments to devise means to stop it are also being tried here

It is interesting to note that Mr Lacey's theory of flow in alluvial channels has been adopted for future work in the United Provinces This is perhaps the first time that Mr Lacey's theory has been given official recognition This experiment of replacing Kennedy Diagrams by Lacey Diagrams will be watched with interest

Sind

Here researches on irrigation problems are carried out by the Development and Research Division A number of model experiments on different hydraulic structures appears to have been carried out systematically and more or less on conventional lines

Here again Lacey Theory is being put to the practical test Data from seven regime sites were analysed with a view to see how the equations derived therefrom agreed with those of Lacey's Certain relationships between different hydraulic constants obtained from these channels have been worked out by the method of least square Agreement in certain cases is quite good Determination of seepage loss from the bed of the canals is also being carried out here and treatment with sodium carbonate is also being tried

From the *Report* it is apparent that the irrigation engineers are becoming conscious of the fact that problems of irrigation should be tackled exactly on the same lines as any other scientific problem and not on empirical lines as was the case previously In this respect Punjab appears to have gone ahead of every other province Here the whole irrigation research is conducted by a band of scientists who must be working in close co operation with engineers as is evident from their publication on Design of Weirs on Sand Foundations' This is indeed the right spirit where the scientists should be left free to develop the technique and arrangements of the experiments, the interpretation of the results to be done conjointly with the engineers

A comparison of the two *Annual Reports*—the first one and this one will show how irrigation research has developed On the hydraulic side, model experiments in flumes have become the usual thing experiments on river models are coming to the front and practical irrigation problems such as seepage losses from canals movements of silt in canal and their control at the head works are being recognised as being amenable to scientific treatment Indications are evident that irrigation engineers are coming to recognise the help that they can derive from scientists and are not reluctant to utilise it

It is a pity that this spirit of scientific research in irrigation problems has touched only a few provinces Other provinces such as Bengal and Madras where scientific investigations on purely academic lines are so intensively pursued should not lag behind It is hoped that irrigation engineers in these provinces will lose no time in attracting some of these scientific workers to irrigation problems on whose proper solution depends much of the prosperity and wealth of the country that they serve

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The Conference of Medical Research Workers in India.

THE Fifteenth Conference of Medical Research Workers in India was opened by His Excellency the Viceroy at the Imperial Secretariat New Delhi on 29th November 1937 In his address His Excellency briefly reviewed some of the outstanding health problems of India making particular mention of those connected with malaria tuberculosis cholera maternal mortality and nutrition and stressed the importance of medical research from the point of view of the health and happiness of the people In recalling that Indian medical research workers were the inheritors of a most distinguished tradition His Excellency emphasised the necessity for maintaining the work at its previous high level and expressed the hope that research into the many problems of health existing in India would commend itself to private munificence

After His Excellency withdrew Major General F W C Bradfield, Director General, Indian Medical Service, in the course of his address referred to a number of important events that had taken place during the year The establishment of the Central Board of Health, he said was an event of great significance as that body would provide an opportunity for periodical consultations between the Central and Provincial Governments and Indian States in the framing of common policies regarding public health and for the interchange of information the result of varying experience

As regards research work the contributions made by Indian research workers in regard to the elucidation of the cholera problem had received the commendations of the Office Internationale d Hygiene Publique As regards the danger of the importation of yellow fever into India the Government were taking a strong stand and as a result of Notification dated September 1936 the entry into India of æroplanes and of individuals from infected and suspected yellow fever areas is now under strict control Further protective measures which were being taken at the Karachi Airport were nearing completion

India sent a strong delegation to Java to the Rural Hygiene Conference organised by the League of Nations for the Far Eastern Countries Many of the recommendations made by this Conference were considered by the Research