

## IRRIGATION RESEARCH IN INDIA

THE *Annual Report of the Central Board of Irrigation in India* (Publication No. 24, 1942, pp. ii + 260), is a record of the technical work of the Central Board of Irrigation during the year 1939-40. The technical discussions embodied in the Report are the result of two meetings of the Research Committee and the Eleventh Annual Meeting of the Central Board of Irrigation held during 1940. The contents of the volume are divided into twenty-one groups to facilitate reference and the discussions at the meetings appear classified under the different groups.

The Central Irrigation and Hydrodynamic Research Station, Poona, carried out during the year 1939-40, among other things, a number of experiments on silt control and scour in canals, river training, profile for high coefficient weir, canal falls of various designs, flow in expansions in open channels and scale effect of models. Theory, design and construction of Gibb modules, Ganges flood and its lessons and relationship between meander belts and width and discharge of rivers on flood plains and of incised rivers are some of the papers published by the Station.

The Punjab Irrigation Research Institute continued to carry out its investigations on river models of the Sutlej River downstream of Panjnad Headworks, the Chenab River upstream of Khanki Headworks, the River Ravi upstream of Madhopur Headworks, the Beas River upstream of Islam Headworks. The Chemical Section continued its work on the effect of the soil crust on the rise of water-table and its studies on the stabilisation of soil. The transmission constants of water-bearing sands, the influence of shrouding, the diameter of the strainer and the influence of its position with respect to impermeable strata on the discharge and the determination of permissible velocity of flow through sand continued to engage the attention of the Physics Section. In the Land Reclamation Section, studies of the movement of moisture and salts in the soil

were continued, both in the field and in the laboratory.

The Poona Irrigation and Research division was engaged during the year on problems connected with economy of water, land drainage and reclamation, and the adoption of effluent irrigation. The Development and Research Division, Sind, carried out a number of experiments on models of irrigation works, conducted a variety of experiments on the field, to determine the value of coefficient 'C' in the broad-crested weir formula, absorption and evaporation losses in water courses passing through typical soils in Sind, and requirements of water for various irrigation units, and conducted silt survey of channels and made investigations in connection with Lacey's silt theory and the statistical relation between the mean velocity of a section and the central surface velocity and such other relations. The United Provinces' P.W.D. (Irrigation) Research Section studied the efficiency of linings and the technique of sodium carbonate lining, conducted a number of experiments on models of irrigation works and carried out investigations on canal and gul losses.

Discussions at the meetings are, as already stated, classified into different groups. Among the subjects discussed are the following: Design of Channels in alluvium, Silting of Reservoirs, Flow in Rivers and Canals, Opinions on Kutter's and Manning's formulæ and Lacey's regime formula, statistical data pertaining to River Flood Control and Meandering of Rivers. Enumeration of some of the subjects discussed has been done to indicate the very valuable work carried out by the five Irrigation Research Stations in India. The *Annual Report (Technical)* of the Central Board of Irrigation is a volume containing much useful and instructive information on a variety of subjects of special interest to irrigation engineers.

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