Paper No. 51
Year 1919

EXPERIMENTS ON BROAD CRESTED WEIRS

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The author was calculating the afflux due to a proposed weir at Abazai on river Swat when it was suggested to him by Mr. Hervey that the weir would cause probably no afflux in high floods. Mr. Harvery's opinion was later confirmed by the autor by observations during the construction of this weir. River Swat being very narrow at Abazai was further constricted by a ring bund round half the wir already constructed. The bund had to be made smooth and strong enough to withstand the high afflux expected during a freshet passing through the constriction. Considerable afflux was noted at the bund during low winter discharges but a large freshet twice as big as the maximum recorded winter flood passed the site without causing any significant afflux. The estimated afflux had indicated, however, that water would overtop the ring bund. Also on many susequent occasions the author observed that a smooth obstruction in the bed or on sides of a stream causes a smooth depression in water surface downstream of the obstruction and since the loss of head is negligible in such cases, the water levels upstream and downstream are the same.

The proposal in 1917 of raising the crest level of Kalabagh weir to feed the new left bank Indus canal led to a difference of opinion over the possibility of increased afflux. The author'a view that broad crested weir would probably cause no afflux (except for a small loss of head due to friction) in a big flood was not accepted. This prompted the author to conduct some experiments to establish the truth of his opinion. A minor near Mardan with a well fall of about 26 ft was selected for the experimental study. The earthen channel from head to wellfall was converted into a 2.5 feet wide flume. A six inches high weir having