

The failure of a weir on sand from a seepage flow can occur by (1) undermining of the subsoil and (2) uplift due to pressure under the floor being in excess of the weight on the floor. The failure from the undermining of the subsoil which usually starts from the tail end of the work is the most common. Its causes and measures to prevent such failure are therefore discussed in detail. The investigations prove the absolute necessity of having some depth of piles or vertical cut-off at the tail end.

One general feature which is noticeable in all the experiments is that the insertion of a pile anywhere results in heading up or increase of pressure upstream and a reduction downstream, the increase or reduction being maximum at the pile and decreasing rapidly farther off. The main influence is confined to a radius equal to the depth of the pile. At twice the radius the influence becomes negligible.

The last chapter discusses principles governing the design of weirs in relation to the flow of water over the surface. The subject of surface flow is still lacking in

researches and the design is based on empirical formulæ which may require to be modified in the light of investigations to be conducted in future. In subsurface flow, the chief factors which govern the design of weirs are (1) uplift pressures and (2) exit gradients. But in the case of surface flow the additional factor of dynamic impact has to be considered. The design in this respect will depend upon (1) the afflux, (2) the changes in the regime of river, (3) the discharge per foot run, (4) flood scour, and (5) the position and depth of the trough of the standing wave. The material discussed in this chapter represents the accumulated experience in the field supplemented by a limited amount of experimental investigations. The great need for further research in regard to surface flow is emphasised.

The book contains a large number of tables, graphs, diagrams and photographs of experiments which are highly interesting and useful in following the theoretical calculations. The authors and their colleagues deserve to be highly commended for their excellent work.

V. G.

OBITUARY.

Pandit Hemraj.

PANDIT HEMRAJ, Principal, Dyal Singh College, Lahore, whose untimely death is being mourned in all circles, was born in Daffar, a village in the Hoshiarpur District of the Panjab, towards the end of the year 1886. His father Pandit Ganga Ram who survives him is a poor Brahmin. It was under hard circumstances, therefore, that Pandit Hemraj received his education. He passed his middle school examination from the S.D. School, in 1903, and his matriculation from the Government High School, Hoshiarpur, in 1905. He passed his B.A. and M.A. examinations from the D.A.V. College, Lahore, with distinction, standing first in the first class in the M.A. examination

in 1912. Shortly after passing his M.A., Pandit Ji was appointed in October 1912, an Assistant Professor of Mathematics in the Dyal Singh College, Lahore. Pandit Ji's work thus came to the notice of the Panjab Government and Sir John Maynard, the then Vice-Chancellor of the Panjab University, moved the University to offer him a scholarship to go abroad for higher studies. The offer was not accepted for reasons of health. By hard work Pandit Ji rose to the Principalship of the College in 1921, and served it ably till the time of his death on the night of the 12th November 1938. His death has left a void in the academic life of the Panjab University.

HANSRAJ GUPTA.
