The Canadian Society of Civil Engineers.

INCORPORATED 1887.

ADVANCE PROOF—(Subject to revision).

ON THE VARIATION OF THE COEFFICIENT OF DISCHARGE FOR SMALL ORIFICES.

By T. P. STRICKLAND, B.E., M.Sc., S. Can. Soc. C.E.

(To be read before General Section, January 7, 1909.)

Introductory.—Early in 1898, during the preparation of apparatus for other experiments, the author made, at the suggestion of Professor Bovey, some determinations of the coefficient of discharge of two sharp-edged circular orifices. In working up the results for publication, it has been found that the variation of the coefficient of discharge, with the head, can be represented by a simple formula, which is also applicable to the results obtained by other observers. A study of all the results available throws some light on the manner in which the coefficient varies with the size and shape of the orifice.

It is, of course, unnecessary to enter here into any discussion of the ordinary theory of the discharge of fluids through sharp-edged orifices; suffice it to say that if Q be the quantity of water discharged in time T through an orifice of area A under a head h, the coefficient of discharge may be defined as the ratio of the actual discharge Q to the theoretical discharge $AT\sqrt{2gh}$; and that the coefficient may obviously be determined by measuring the quantities Q, T and h for an orifice of known area.

Description of Apparatus.—The phenomena of jets issuing from sharp-edged orifices are displayed in a very perfect form in the hydraulic laboratory at McGill University, and are doubtless familiar to most members of this Society; they have, moreover,