

The lockmasters on the Canadian canal systems measure the depth of water on the lock-sills every day in the year. This has been done at Ottawa since 1844, and, owing to this most fortunate circumstance, we can deduce the discharge on each day of the twenty odd thousand days since. I cannot too strongly urge upon all who desire to conserve our water supplies this simple matter of keeping daily gauge readings, winter and summer, for, whenever information is required to develop water-power, to build locks, or to construct reservoir dams, this record is a fundamental requirement.

The record of the Ottawa river has been charted, and, from it, the following general facts have been obtained. The average flow during sixty years has been 55,000 c.f.s., or about 1 c.f.s. for each square mile of watershed. That is, if the main river and all its tributaries had the spring flood conserved in reservoirs, the flow at Besserer Grove would then average 55,000 c.f.s., instead of rising to 250,000 c.f.s. in May, 1876, and shrinking to 10,000 during the winter months of other years.

Diagrams made by the Georgian Bay Canal Survey branch of the Public Works Department show how the flow accumulates *en route* from Mattawa to Montreal during some typical years in the history of the river. The peak of the flood is always reached during the month of May, generally between the 10th and 30th. The flow begins to increase about the 1st of April and falls to normal during July, whence it falls steadily till the succeeding month of April, except for the rise due to the autumn rains during October and November. September shows the lowest water, and January, February and March are always near the danger point for power developments, thus immensely diminishing the value of the river. In fact, during the winter of 1908, it was difficult to get from this great river power enough to carry on the public utilities at Ottawa. This brought affairs to a crisis, and the local power holders came to an agreement to construct a series of stop-log sluices across the Chaudière falls, thereby saving the water that formerly ran to waste, and also creating a head-basin to lessen the ice difficulties. The basin formed, however, is only three square miles in extent, and a draught of 10,000 c.f.s. would lower its surface 10 feet in a day. It was therefore necessary to examine the lake reservoirs along the route with a view to storage. Above Ottawa is Deschenes lake, 45 square miles in area, lac des Chats, 40 square miles in area, Coulange lake, 25 square miles in area and Pembroke lake, 60 square miles in area, and, above Mattawa, is lake Timiskaming, 115 square miles in area, with Kipawa, 110 square miles in area, and the Quinze-Expense, 100 square miles in area. Timiskaming, Kipawa, and Quinze-Expense form a system of reservoirs that can be cheaply con-