

# The Canadian Engineer

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## MANITOBA HYDROMETRIC SURVEY

SOME INTERESTING FACTS CONCERNING THE METHODS EMPLOYED IN THE SECURING OF HYDROMETRIC DATA IN THE PROVINCE OF MANITOBA.

**T**HE gathering of hydrometric data is of prime importance, not only from a hydraulic power standpoint but also in connection with other uses of the surface water supply. These various uses may be enumerated as follows: Domestic, municipal and manufacturing purposes, irrigation, water power, drainage, sewage disposal, navigation, flood prevention. The following observations on this subject are taken from the progress report of the Manitoba Hydrometric Survey, the name of the organization of the Dominion Water Power branch covering the province of Manitoba.

In the province of Manitoba, information regarding stream flow or surface water supply is, or may be, required for any one of these uses. Throughout the province, numerous towns and villages are depending upon the rivers for their domestic water supply. This demand will rapidly grow as the population increases, and further information in regard to the amount of water available will be required. In the southwestern part of the province, where the average annual rainfall varies between 14 and 17 inches, and where agriculture is the chief pursuit, the use of water for irrigation purposes is to be expected. Many of the rivers throughout the province present power possibilities, and studies have been made to determine their probable economic value. The true value of the potential water-powers cannot be determined without a thorough knowledge of the water available in the streams, especially under conditions of low discharge. In the northern and southwestern portions of the province the reclamation of large tracts of lands by drainage may profitably be undertaken. As settlement becomes more dense the necessity for the reclamation of these lands will become more pressing. It is essential, therefore, that accurate information concerning the regimen of flow of streams forming the natural outlets for such drainage be obtained.

The use of the streams of the province in connection with sewage disposal will, at no distant date, command attention since the rapid growth of the towns and villages will soon render necessary the formulation of a policy relative to the disposal of their waste in such a manner

as will obviate any possible danger to the community as a whole. In order that this question may be handled intelligently, a thorough knowledge of the run-off conditions of the streams is of extreme importance.

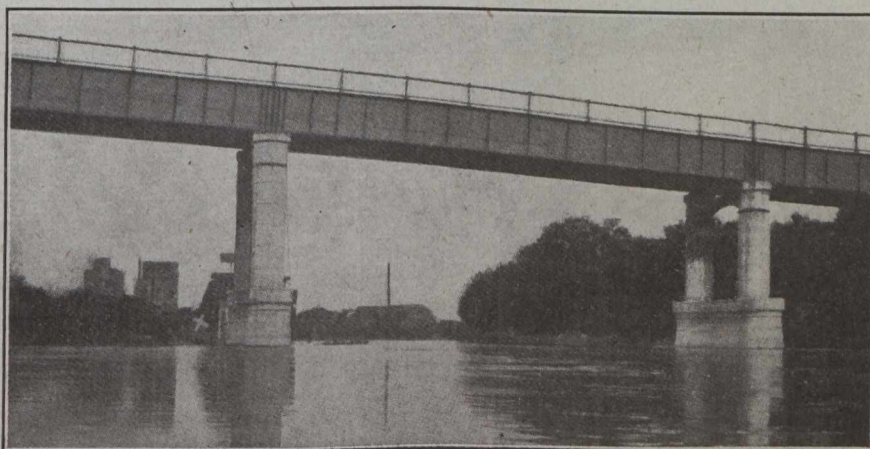
Several of the main rivers in the province might be utilized for navigation purposes; in fact, before the advent of the railway in Manitoba, the Red River formed the only means of communication with the outside world. Improvement for navigation purposes is being urged in many quarters, and for this purpose a study of the hydrology of these streams is necessary.

Owing to the fluctuation of stream flow, not only from day to day but from month to month and from year to year, and the effect that such variation may have upon any one of the uses to which the streams may be adapted, it is imperative that the gathering of stream flow data be made to extend over a considerable term of

years, so that a true idea of the stream regimen may ultimately be formed.

**Organization and Scope.**—When the Manitoba Hydrometric Survey was organized early in 1912, it was decided that the work should be carried on in as comprehensive a manner as possible, and that as funds became available and the opportunity offered, the work should be extended to embrace the whole of the province of Manitoba. At its inception, however, the district in which stream flow data were particularly required was that tributary to the Winnipeg River, as surveys were being carried on to determine the power possibilities of that river. Since the organization of the survey the work has been extended from time to time until it now covers all the principal rivers of the province.

In organizing this work, it was recognized that probably the best and most comprehensive methods for gathering hydrometric data were those employed by the Water Resources Division of the United States Geological Survey. Through the courtesy of the officers of that organization, studies were made of their field and office methods, both districts covered by their engineers and at the head office in Washington. The work was then mapped out and has since been carried on along lines



Assiniboine River, Brandon. Gauge at Bridge.