

## WATERS AND WATER-POWERS.\*

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**D**URING the past year attention was devoted to the completion of two important reports. The first of these, on the Water-Powers of Manitoba, Saskatchewan and Alberta, had already reached an advanced stage, but a considerable amount of additional information, which has become available during the year, has been added. Much of this additional information was obtained through the Water Power Branch of the Department of the Interior investigating water-powers in the Prairie Provinces. The report contains a comprehensive description of practically all the rivers which have been surveyed or explored in this portion of the Dominion and which offer water-power possibilities. Gauging stations have also been established on many of these rivers, to obtain accurate and continuous data respecting the flow at different times of the year, and tables, showing at a glance its history in this respect since observations were commenced, are included under each stream. The more northerly rivers are also described in all the details which available data permit. Particular attention was given to information from a water-power viewpoint, such as description and descents of rapids, and nature of the banks and beds of the rivers.

**Information of Water-Power Possibilities.**—A feature of this report, which will be of interest to those desiring to obtain a general idea of the water-power possibilities, without entering into detailed descriptions, are the tabulated statements appearing as appendices I., II., and III. and the accompanying map of reference. Practically all the power sites, falls or rapids referred to in the text, and upon which fairly definite information is available, are enumerated in a concise form for ready reference. The rivers are grouped into three classes, graded according to available data, each appendix covering one class. Under the first are the Saskatchewan River and tributaries and other streams flowing into Lake Winnipeg, enumerating 121 power sites, for all of which fairly dependable information as to flow and descent is available; particularly is this so of the Winnipeg and Bow Rivers, which have been carefully surveyed. The second includes 116 rapids or falls on rivers for which complete data on flow are not available, but where it has been possible to estimate this during the open season. The third gives descents of 53 rapids or falls, but no attempt is made to estimate the flow. The report is fully illustrated, including many sketch plans and diagrams.

**Waterworks and Sewerage Systems.**—This enlarged and revised edition of the report on Waterworks of Canada, first published in 1912, has been issued, and contains short descriptions of all waterworks and sewerage systems in the Dominion. This report is also fully illustrated. Under Part I., some 528 waterworks plants are covered, while the sewerage systems and treatment plants in 279 municipalities are described in Part II. Several tables, compiled from the data in the report and summarizing points of special interest, are included. The subject of sewerage and sewage disposal is given more space than in the previous edition, and an introductory tabulated statement shows how serious the question of stream pollution is becoming in Canada. This shows the great number of our inland waters receiving raw or un-

treated sewage; particularly is this the case in the eastern portion of the Dominion, while in the west we have the excellent example of the province of Saskatchewan, where 80 per cent. of the sewerage systems have treatment plants. The supply of water to communities is universally recognized as the most important function of inland waters, and, if grossly polluted, they become a great menace to water supply systems drawing water therefrom. This may be the case even where filters are employed, as a grossly polluted source of supply may overload the filter, which latter should only be regarded as an additional factor of safety in an operation which should begin with the proper treatment of the sewage before it is discharged into any body of water.

**New Water-Power Enterprises.**—Although there was not a very large increase shown in Canada along the lines of new water-power enterprise during the year, a few are to be noted. Winnipeg has added some 13,000 h.p. to its municipal plant at Point-du-Bois. The Laurentide Power Co. has inaugurated its new hydro-electric development at Grand'mère on the St. Maurice River, the ultimate capacity of which is to be 125,000 h.p. The Eugenia Fall plant, on the Beaver River, has been placed in operation by the Hydro-Electric Power Commission of Ontario, with an initial capacity of 4,500 h.p., under the relatively high head of 540 feet. This plant forms a part of the Commission's system which now covers practically the whole of southwestern Ontario. The Hawkesbury Electric Light and Power Co. has completed and put in operation its new hydro-electric plant at Bell Fall, on the Rouge River, 5,000 h.p. being developed, under 60 feet head. Among the new projects proposed during the year may be mentioned that of developing 600,000 h.p. at the Grande décharge of the Saguenay River, with the object of manufacturing chemical fertilizers.

The St. Maurice River is the largest entering the St. Lawrence between Montreal and the Saguenay. With a drainage area of over 16,000 square miles, it possesses many important water-power sites, three of the largest being already utilized at Shawinigan Fall, Grand'mère and La Tuque. Both the developed and latent powers on this river are of great value, not only on account of their large capacity but also from their geographical position. The Quebec Streams Commission, realizing the great benefits which accrue from conservation storage of the upper waters of the St. Maurice, selected it as one of the first rivers to receive their attention.

After careful studies, it was decided to establish the main reservoir at La Loutre Rapids, 38 miles in an air line north of the National Transcontinental Railway, at the lower end of a long intricate chain of lakes.

It is of special interest, inasmuch as it will be the largest reservoir in North America, and the third largest in the world, being exceeded by the Assuan reservoir, on the Nile, 3,750,000 million cubic feet, and the Gatun Lake, at Panama, 183,000 million, as compared with the La Loutre, 160,000 million. The next largest in North America is the Elephant Butte reservoir in New Mexico, with an eventual capacity of 115,000 million cubic feet.

The dam site is in entirely unsettled country, and, by the shortest available route, is 50 miles distant from Weymont and Parent, the nearest railway stations.

The material for the dam, aggregating 25,000 tons, will be transported 30 miles by water on the St. Maurice, and by a construction railway for the remaining 20 miles.

The dam is to be 1,720 feet long, of four straight sections, with 851 feet of spillway. Among the notable

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