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PRECISE LEVELLING BY THE GEODETIC SURVEY

A REVIEW OF THE WORK BEING DONE BY THE GEODETIC SURVEY OF CANADA IN MAKING A PRECISE SYSTEM OF LEVELS.

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LEVELLING may be defined as the art of determining the relative heights of points on the earth's surface. Precise levelling differs from ordinary levelling in several respects, both as to the instruments used and the field methods employed; finer materials and workmanship enter into the construction of the instruments and special precautions are taken in the field to avoid the

curately determined bench marks to connect with at short intervals and is still further facilitated by the use of contour maps of the country, these having been prepared with a line or a net of precise levels as the basis. In this connection it is interesting to note that the Public Works Department, at the time of making the surveys for the proposed Georgian Bay Ship Canal, found it necessary

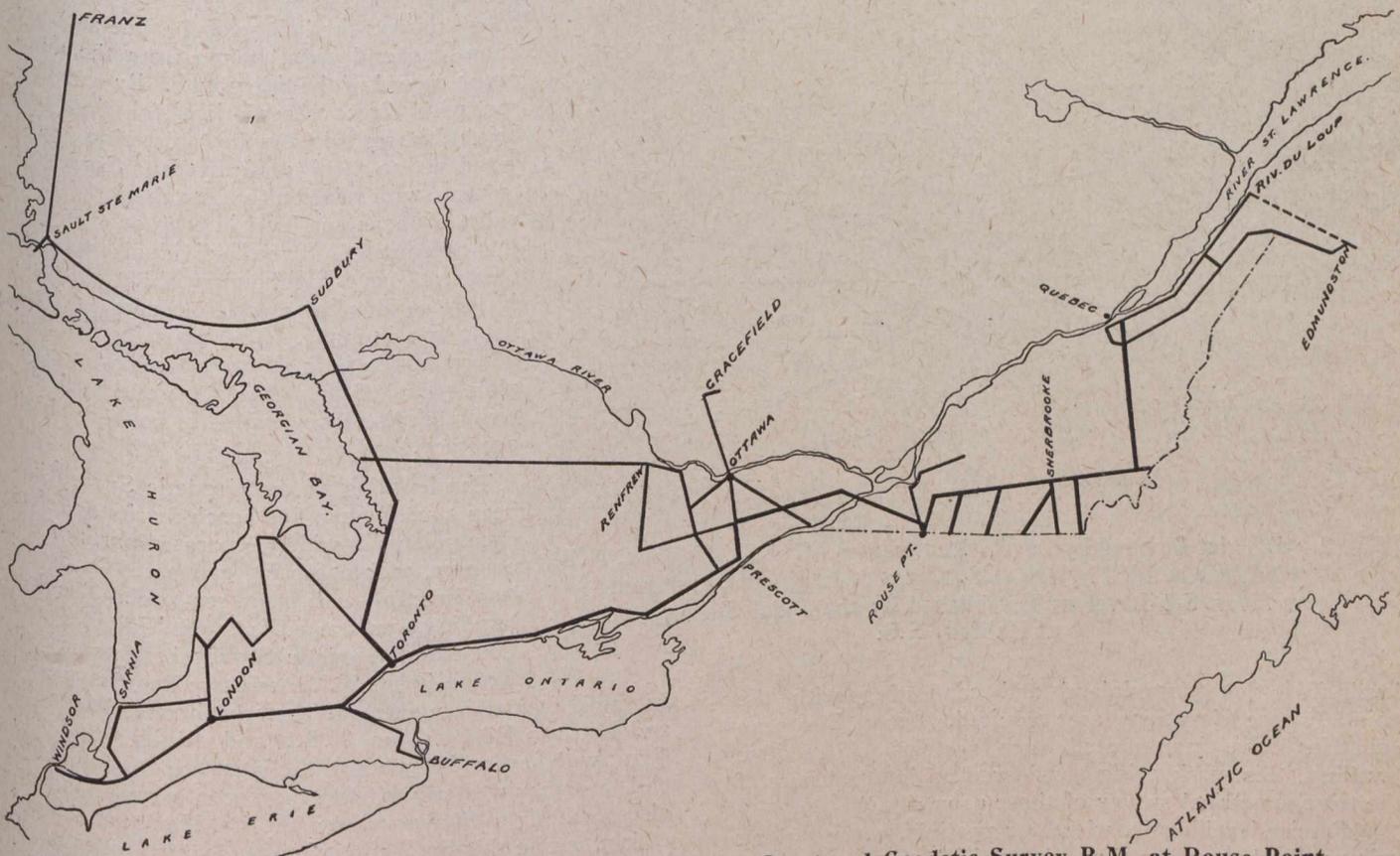


Fig. 1.—District Covered by Levels Run from United States Coast and Geodetic Survey B.M. at Rouse Point.

accumulation of errors on long lines. One of the most important precautions is the system of duplicate levelling—all work being run at least twice, in opposite directions. To anyone familiar with the practice of ordinary levelling various other differences in procedure will reveal themselves during the course of this paper.

The value to any country of a system of levels of high precision is unquestionable. The exploratory and other preliminary work in connection with engineering projects such as railways, canals, highways, water supply and irrigation systems, etc., is much facilitated by having ac-

several years ago to run a line of precise levels from Rouse Point, N.Y., to North Bay, Ont., via Vaudreuil and Ottawa, checking this by means of water transfers across Lake Ontario and a line of precise levels from Toronto to North Bay. Again, it is significant that at least two of the leading American railroads—the Pennsylvania and the Baltimore and Ohio—have carried out precise levelling operations of considerable magnitude at their own expense.

Judging from all the above that the work is of considerable practical value to the public at large, let us turn for a moment to its usefulness in connection with the