

SURVEY

STAFF ORGANIZATION.

In 1904, the sum of \$250,000 was granted by parliament for the purpose of commencing a detailed survey of the proposed waterway from Georgian Bay to Montreal, a distance of 440 miles.

This amount was made available at the close of the session, August 10, of the same year, and in accordance with the directions of the Honourable C. S. Hyman, Minister of Public Works, I assumed immediate charge and commenced at once the work of staff organization and the purchase of the necessary equipment.

After many consultations with the chief engineer my final instructions were, in order to fully meet the object in view, that the survey be of such a character that when the notes were reduced and plotted there could then be projected upon the plans, the best location possible for a canal at least 22 feet in depth, with a bottom width of 300 feet, from which profiles could be drawn and a correct estimate made of the amount and character of material in excavation and embankment, nature of various foundations and final design of locks, dams, regulating works and other structures; also the right-of-way and definition of flooded area.

It was, moreover, understood that the whole of the information to be shown on the plans, as topography, contours, soundings, physical features of the route, &c., should be obtained from actual surveying and that plans from previous partial surveys should be used only as preliminary information and for general guidance, with the exception of the French River section which had been surveyed in 1901 by the late J. W. Fraser for a 22-foot waterway. It will, however, be seen further in this report that supplementary surveys of the French river had to be undertaken on account of desirable changes in the project.

At such points where several possible routes for the canal existed and when the best location could not be determined by exploration alone, my instructions were to survey and develop the different routes in order to arrive at a selection by comparison of their relative merits as to length, curvature, probable cost, &c.

To this end and to get the results within a reasonable time it was deemed necessary to place a large force of engineers in the field.

From the close of the session until September 27, the date on which the different parties were formed at Ottawa, it was my duty apart from departmental work, to complete all arrangements so as to be in a position to commence work as soon as the staff could be organized.

Camp equipment consisting of tents, blankets, cooking utensils, &c., necessary for nine parties of fifteen men each were purchased. Surveying instruments were ordered to be delivered within the shortest possible time and boats of a suitable character for the swift and dangerous waters to be surveyed were ordered to be built according to special design. A set of survey rules as given in Appendix A was prepared in order that the work done by the different parties be as efficient and uniform as possible.

The formation of a Board of Engineers to direct and control the survey was discussed, but was finally abandoned as it was decided that the work should be carried out under direct departmental control with a member of the permanent staff as engineer in charge and executive officer, and such temporary additional engineering