

tion, and which would not result in disappointment and loss to those who have been induced to invest their means in that which has proved to many an unprofitable undertaking."

If to-day a railroad is projected in England, or any other country possessed of a good topographical map, preliminary surveys such as we are obliged to make are unnecessary, for from these plans the lengths and grades of any proposed line can be determined with sufficient accuracy to enable a final location to be made.

In carrying on a survey of the character contemplated, it is necessary to run lines of exact levels from station to station, and thus we would have the elevations of points all through the settled portions of the country, and in future operations, in which levelling is a feature, all levels could be referred to a common datum line (sea level for instance), and when railway lines are pushed back into the wooded interior, the physical character of which is but little known, we would then have some definite idea of main watersheds and valleys, to guide future operations, instead of relying, as is at present done, on guess work and hearsay evidence.

Among other benefits to be derived from a survey of this kind, are the following: Our extensive coast line both in the Gulf of St. Lawrence, on the Atlantic and Pacific seaboard, and also in our inland waters, has been very roughly determined in many places, and in consequence many disasters happen to shipping, and many valuable lives are lost annually, which would in a great measure be avoided were we in possession of reliable charts of our waters; and one of the first requisites in making the hydrographic surveys, necessary to provide the data or compilation of these charts, is that certain points on the shore should be accurately fixed. It may be mentioned in connection with the Hydrographic Survey of Georgian Bay, at present being carried on under the direction of Staff Commander Boulton, R.N., that Commander Boulton stated before the D. L. S. Association, at its last annual meeting, that in making his survey he had not been able to connect his work with any point accurately determined by Canadian authority, but had to use points established by the United States Coast and Geodetic Survey.

On our inland lakes and waters large sums are annually spent in harbor and other improvements, and yet the geographical positions of these harbors and waters are not accurately shown on any map or chart.