

summarized in a paper contributed to the Royal Society of Canada (10). The effects are classed under the headings of Weak Currents, Constant Currents, and Strong Tidal Streams. The importance of a comparison of the under-current with the surface direction, as an indication of disturbance, is also explained.

Little has yet been done by this Survey in the study of the influence of wind and barometer in modifying the height of the tide. There is more published information on this subject, however, than on the effect of the wind in increasing or retarding the horizontal movement of the water and disturbing the normal conditions which would otherwise prevail. Some attention has been given to the secondary undulations shown by the tide curves, which are apparently related to meteorological conditions; and two papers in which examples are given, and some general characteristics in their mode of occurrence, have been contributed to the Royal Society (11).

It may be well to draw attention, however, to the excellent opportunity for the study of this whole subject which the St. Lawrence estuary affords. It is one of the largest estuaries in the world, with a tide of only four or five feet at its mouth, increasing to nearly 20 feet at its head. A large amount of material is now available for the purpose, as this Survey has now accumulated record from registering tide gauges continuously during 14 years; and with this, there are meteorological observations from ten stations in the area extending from Quebec to Newfoundland, and daily weather charts, which have been fyled from the outset for comparison with the tidal observations themselves.

TIDAL INVESTIGATIONS.

The general method adopted for the investigation of the tides, both on the Atlantic and Pacific coasts, has been the same in its general features. Principal tide stations were established at strategic points to serve as reference stations for the harbours in their vicinity. Owing to the clear field which this Survey had before it at the beginning, the choice of principal stations was unhampered; but as practically nothing was known regarding the character of the tides, it was necessary to feel the way carefully to avoid the undue multiplication of principal stations and to extend as far as possible the region referred to each of them.

For a satisfactory reference station the position chosen had to be free from local influences. It thus happens that an important harbour may be entirely unsuitable as a port of reference, because of its situation at the mouth of a river or within an inlet. On the other hand, some isolated island or lighthouse, of no importance whatever on its