satisfactory as a basis of computation. It is also unnecessary to give this comparison in a tabular form.

It was accordingly thought better to wait until the tidal record at St. John itself could be submitted to analysis; rather than to issue tables which would embody errors corresponding with these variations. Hence although the early record began in 1893, the first tide tables issued for St. John were for the year 1898. The advantage of this course is now apparent; as the tide tables now issued by this Survey, prove to be much more correct than could be obtained by either of the above methods; although they are as yet based upon two years only of tidal record. This also attests the value of St. John as a port of reference, owing to the unusual regularity of its tides.

Tide Tables of U.S. Coast Survey.—Up to 1896, the method given in these tables was to compute the St John tide from Eastport, by a small constant difference in time. The difference first given was 2 minutes, which was afterwards altered by 5 minutes. Subsequently, since 1897, the tide at St. John has been referred to Liverpool, England; the difference in time for high water being 22 minutes to be added.

To test the result of the present method of referring these tides to Liverpool, a comparison was made for the month of September, 1897. The time of high water computed by the difference given, was compared with the time of the tide at St. John as observed, the result being as follows:—

Extreme variation between the time of H. W. as found by this method, and the actual time as observed, 1 h. 02 m. early to 0 h. 16 m. late.

Average error during this month, 17 minutes.

It would thus appear that little if any improvement is secured by this method, over the old plan of computing by a constant difference from Brest. Also, to ascertain whether this reference to Liverpool gave any advantage over the former method in the United States tide tables, of referring the St. John tide to Eastport, a further comparison was made for this month of September, 1897. The time of high water at St. John, computed from Eastport by the difference formerly given, as above, was compared with the tide as there observed. The average error during this month was thus found to be only 9 minutes; from which it would at least appear that no advantage has been secured by referring the St. John tide to the more distant port of Liverpool, instead of to Eastport. The reason for the preference appears to be that the Liverpool tide tables are based upon a record extending over seven years, whereas the tides for Eastport are calculated from a tidal record of a single year.

In order to show for comparison the actual variation which may be expected between two neighbouring places, such as St. John and Eastport, distant 60 miles, the result of the simultaneous observations of 1898 may be cited. These extend over two and a half months, from the middle of August to the end of October. After omitting three days in October on which there was disturbance from a heavy storm, the tides as observed simultaneously at St. John, and at Welchpool on Campobello Island opposite Eastport, are found actually to vary as follows:—

Extreme variation of the difference in the time of high water as observed at the two places: from 10 minutes early to 10 minutes late, as compared with the average difference in time as found from the whole series of observations.

Mean variation from the average difference, $3\frac{1}{2}$ minutes; during one lunar month from August 17 to September 16. This is given for one month only, to correspond with all the other comparisons, which are also for one month.

Tidal Survey tables.—These are based upon the harmonic analysis of two years of the tidal record at St. John itself. To test their accuracy, the time of high water in the tables was compared with the tide as observed during one month, from July 18 to August 18, 1898. This comparison is given as Table B. herewith; the result when summarized being as follows:—

Extreme variation between the predicted time of H. W. in the tide tables, and the actual time as observed: 16 m. early to 5 m. late.

Average variation during this month, 6 minutes.

This shows an improvement in accuracy of 65 per cent as compared with the method at present given in the United States tide tables; as well as a distinct improvement over the method of computing from Eastport.