

The observations are at the Spring tides, from May 9 to 12, 1914; taken by Messrs. F. Johansen and W. S. Brooks. They are readings on a tide scale to the hundredth of a foot, taken every fifteen minutes day and night continuously. The Establishment obtained from the four best luni-tidal intervals, nearest to full moon, is 12 h. 14 m. Relatively to the nearest transit of the moon, high water occurs sixteen minutes previously; the transits being 12 h. 30 m. apart at the date of these observations. The difference in the time of high water with Collinson point, brought to absolute time by allowing for longitude, is thus found to be 49 minutes earlier at Demarecration point.

The Spring range, from the mean of four differences between high and low water, as shown in the table appended, is nearly 9 inches. The determination of the Establishment is also shown in the table.

Cape Kellett.—On the west side of Banks island, Beaufort sea. Approximate longitude of tidal station, in bay on south side of the cape, 8 h. 19 m. West. Observations were taken here in December, 1911, and January, 1915, by Messrs. G. H. Wilkins and C. Thompson; and simultaneously for a few days in January, by Messrs. W. J. Baur and S. Storkerson, at a point 20 miles north on Banks island, which is also on the open shore of Beaufort sea. There are also observations of wind and barometer, every four hours, throughout the period.

These observations were taken on a tide scale read from the top downwards to the water surface; the readings being in feet and inches to the nearest quarter of an inch. From December 26 to January 14 and again from January 17 to 21 and 27 to 30, the readings are at intervals of four hours, day and night. It is unfortunate that it is not possible to deduce any result from this series of observations when they represent so much labour; because the range is so slight and there are only six readings of height in the twenty-four hours. For two days at the Spring tides, on January 15 and 16, the observations are continuous every fifteen minutes, day and night; and they become so again for four complete days at the Neaps, on January 22 to 26. These continuous observations were plotted on a large scale, to obtain the true tide curves.

The observations at 20 miles north of Cape Kellett, are continuous every fifteen minutes, day and night, during four days from January 22 to 26. These are at the Neap tides. The best results that can be deduced for the range of the tide are as follows:

At Cape Kellett, Spring range.....	0.43 foot.
At Cape Kellett, Neap range.....	0.40 "
At 20 miles north, Neap range.....	0.41 "

In attempting to arrive at an Establishment, the difficulties are serious, because of the wide uncertainty in the time used in the observations, the small number of high waters at the Spring tides, and the great irregularity in the luni-tidal intervals due to the very small range of the tide. For, the time of high water is derived in some cases from a tide having less than two inches of range. The only note as to time error, refers apparently to the first period beginning December 26. It is as follows: "Time approximately one-half hour fast on local. By comparison, two hours fast on watch, January 20." In the other two periods, at Cape Kellett and at 20 miles north, there is no indication as to the time; and it can only be assumed that it is correct on the average, although the above note is not reassuring.

On working out the luni-tidal intervals on the basis above indicated, they are found to vary from 6 to 12 hours. The variation with successive transits is either from 6 to 10 hours, or from 8 to 12 hours; which must be actual, as the time used would be the same in the course of any one day. This