

later date at the same points. This is of interest at the outset ; and these stations will be referred to again in describing the character of the current in the offing of the several bays on this coast.

PLACENTIA BAY.

If vessels when on an easterly course along the south coast of Newfoundland, are set to the northward because of an indraught into the bays which they pass, this effect must be chiefly due to Placentia bay, which is the largest one there is. If a vessel keeps to its true course as far as the longitude of Cape St. Mary, we cannot suppose that it would be set so far north, while crossing St. Mary's bay, as to run ashore at Cape Pine. Any northward set must occur earlier, while crossing the mouth of Placentia bay. For these reasons more time and attention were given to this bay than to the others on this coast. It is generally supposed that the water makes to the northward, past Cape St. Mary, and that it circles around the bay and passes out on the western side. We may keep this view in mind as a fairly reasonable supposition, while we consider how far it is justified by the observations obtained and the facts arrived at. The observations in the region of this bay were taken at five stations ; three of these were off the mouth on the eastern side, one was in the middle of the bay, and another at the mouth on the western side. In following the supposed movement of the water, we may begin with the stations at the mouth on the eastern side.

STATION D.—Position $5\frac{1}{2}$ miles west of Cape St. Mary, in 36 fathoms. This position was outside the line of the headlands to the eastward and it also opened up the east shore of Placentia bay. It was thus in the line of any set in either of these directions. Anchorages were made on three occasions ; but it was poor holding ground, so that even a moderate sea made the vessel drag, notwithstanding every effort to keep hold. It is unfortunate that the observations were thus interrupted on each occasion, as this position is an important one in arriving at an understanding of the movement of the water in Placentia bay. To make up for this, a specially careful analysis of the observations here been made.

The observations secured were as follows :—June 2nd and 3rd, 15 hours. September 3rd to 5th, 40 hours ; September 21st to 22nd, 18 hours. On all three occasions the set was to the eastward of a north and south line (magnetic), and between N. N. E. and S. by E. as limiting directions. In veering between these limits the set was at times directly east, or on shore towards the cape. The wind at these times was light or very moderate, between west and southwest.

The current here is distinctly tidal in its character, the direction being northeastward into the bay during flood tide and southeastward along the general line of the coast during ebb tide. The average set of the flood and ebb is shown on Plate II, based upon five complete tidal periods, making up a total of 62 hours on the three occasions. Their resultant directions are also shown relatively to the coast, as found from the ultimate reduction of these observations. The tidal regularity is unmistakably shown by the fluctuation in velocity ; as it always rises to a maximum at half tide, when it amounts to nearly a knot, and it falls to half a knot at about the turn of the tide. The highest of the maxima was 0.91 knot, at the spring tides.