

whether the variations were due to a progressive wave, or to fluctuations in the current, or to standing waves. The results have not yet been worked out, so we can only discuss some of the "Michael Sars" observations. Unfortunately it was impossible to make direct current-measurements, as the weather was too rough.

During the twenty-four hours we made 86 observations at the buoy, care being taken that the line was absolutely vertical. Surface-observations apart, most of the measurements were made at a depth of 300 metres (19 observations). The temperatures found at this depth are noted in Fig. 189 along the vertical scale, while the hours are put down along the horizontal scale. There were considerable variations: on the 13th August at 5.8 P.M. the temperature was 5.60° C., and on the 14th August at 12.25 A.M.

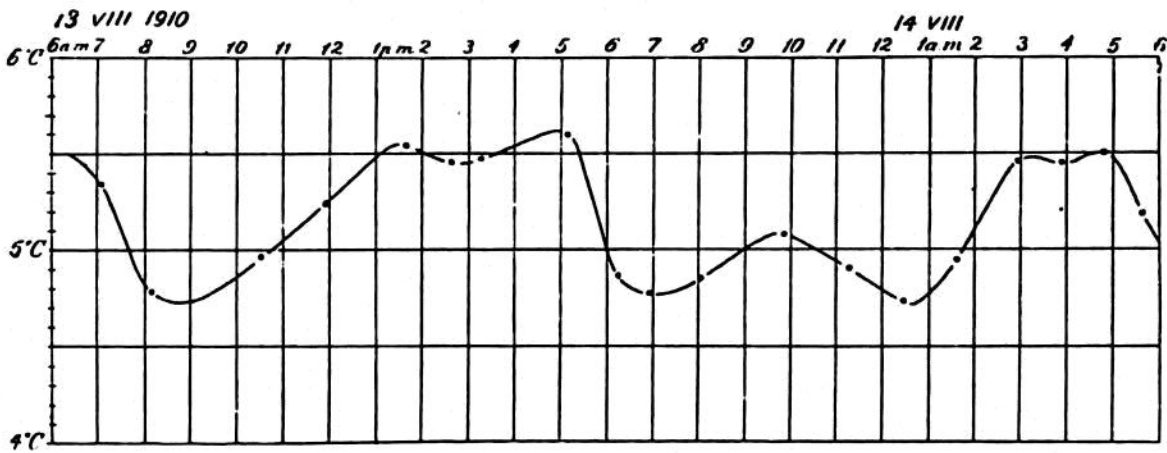


FIG. 189.—TEMPERATURE VARIATIONS AT 300 METRES AT STATION 115 (13th-14th August 1910).

it was 4.73° C.—a difference of 0.87° C. When the mean temperatures of the different water-layers are calculated and represented in curves, it is easy to see how much the temperature altered for each metre of depth. At about 300 metres the temperature decreased with increase of depth to such an extent that a difference in temperature of 0.87° C. corresponded to a difference in depth of about 35 metres. In the other layers there were similar variations, indicating vertical oscillations of between 15 and 35 metres. These observations go far to prove the presence of such undulations of the water-layers, which is indicated also by the form of the curve in the figure, among other things. But these variations are not comprised in one single period, as if they were due to an ordinary progressive wave, or an ordinary standing wave alone. The shape of the curve points to complicated fluctuations of the velocity as the cause of the variations, but it is possible, nay probable, that we