

60 metres near the coast, the water naturally having become lighter and its tendency to spread westwards having overcome the effect of rotation acting eastwards. When the coast-water is cooled down in autumn it becomes heavier again, is not then so much lighter than the Atlantic water, and has consequently not such a great tendency to spread westwards over the surface as in summer; it is then forced towards the land (to the right) again by the rotation of the earth. Thus there are in the course of the year periodic lateral movements of the coast-water, which are of importance, for instance, in their effect on the distribution of the young fish.

The water-layers, then, slant differently according to the strength of the surface-current and the vertical distribution of density. Supposing the surface-current to run sometimes fast and sometimes slow, the layers will respectively be lowered or raised. Again, regarding Fig. 186, the layers that in I. are comparatively deep at Station A, by an increase of the surface-current (as in II.) will rise considerably higher. Thus vertical oscillations are set up as a consequence of the fluctuations of the current; at a certain fixed point the movement will be like that of a submarine wave. Such vertical oscillations may be imagined to arise in other ways. It is, for instance, highly probable that there exist in the sea standing waves with one or more nodes, similar to the undulations of a violin string. Forel, Chrystal, and others have found these standing waves in lakes, the Japanese have shown them to be present in their seas, and we have several indications of their existence in the Norwegian Sea.

Vertical
oscillations.

We cannot dwell any longer upon this question, but will now examine some observations made during the "Michael Sars" Expedition, which show marked vertical oscillations of one kind or another. We made a number of careful measurements in the course of twenty-four hours at Station 115, in the eastern part of the Faroe-Shetland Channel, near the slope west of Shetland, in 570 metres of water. Here we anchored a buoy, near which the steamer kept as long as the observations lasted. We made continuous observations of temperature and salinity at the same depths, and were thus able to see whether or not the conditions at a certain depth varied. At the same time similar measurements were made by the Scottish research steamer, the "Gold-Seeker," on the Faroe side of the channel. By these simultaneous investigations we hoped to determine

Observations
in the Faroe
Channel.