

three belong to the Atlantic proper ; Stations 87, 101, and 106 all lie within the precincts of the "Gulf Stream." At all four stations the temperature is highest at the surface : 22° - 23° C. in the Sargasso Sea (24th June), over 18° C. at Station 87 (17th July), 13° - 14° C. westward of Scotland (7th August), and 13° C. at the station west of Shetland (10th August). It is worthy of note that a temperature of about 13° C. was observed at the surface near Scotland, while the same temperature occurred at a depth greater than 500 metres in the Sargasso Sea.

From the surface downwards the temperature falls very rapidly for the first 50 or 100 metres ; at 100 metres it is from 4° to 6° C. colder than at the surface. Beyond 100 metres the temperature decreases at first much more slowly, then rapidly again, and then very slowly until the great depths are reached, where the temperature changes very little. The layers in which the temperature changes very rapidly are called "discontinuity-layers" (by the Americans "thermocline," and by the Germans "Sprungschicht"). They are particularly marked at Station 106, where there is such a layer immediately below the surface, and another extending from 450 to 750 metres. Between the two (from 50 to 450 metres) there is a fairly uniform stratum, and another one under the deeper layer, from 750 metres to the bottom. At the other three stations the upper discontinuity-layer is also very strongly marked, but the lower one is not so sharply distinguished from the adjoining water-strata.

Discontinuity-layers.

It will be noticed that the temperatures in the deep strata (below 800 or 900 metres) were, at the same depths, nearly identical at the three stations in the Atlantic proper, the differences not exceeding 1° C., although these stations are situated far apart ; but at Station 106 in the Norwegian Sea the temperature was 7° - 8° C. colder. This is due to the form of the bottom, the Wyville Thomson Ridge separating the deep layers of the Atlantic from the deep layers of the Norwegian Sea, so that at a depth of 1000 metres the temperature is 6° - 7° C. in the Atlantic Ocean, and below 0° C. in the Norwegian Sea. That implies two widely different deep-sea regions : a warm one south of the ridge, and a cold one to the north of it, with great differences in the deep-sea fauna of the two regions. The influence of the Wyville Thomson Ridge is very clearly seen in a section across the ridge (see Fig. 106, p. 124), from Station 101 to Station 106 ; in the upper strata, down to 500 metres, there is little difference, but the deeper strata are like

Wyville Thomson Ridge.