

thermometer, and under-currents were practically unknown; but the limits of surface currents had been traced with considerable precision by observations of the temperature of the surface of the sea, even when the movement was so slow as not to be otherwise perceptible. The amount of heat received directly from the sun may be taken approximately to depend upon latitude only, and this heat is in addition to the heat of the surface water derived from other sources, whatever these may be. Observations of surface temperature accordingly give us the heat derived directly from the sun in the region, and the heat derived from the same source during the passage of the water to the region, in addition to the original heat of the water; if, therefore, the water of any region be derived from—that is to say, form part of—a movement of water from a polar source, and if the surface water of another area on the same parallel of latitude form part of an equatorial current, although in that particular latitude they receive in both cases the same amount of heat from the sun, there will be a marked difference in their temperature. To take an extreme case; the mean temperature of the sea in the month of July off the Hebrides, in lat. 58° N., in the path of the Gulf-stream, is 13° C.; while in the same latitude off the coast of Labrador, in the course of the Labrador current, it is $4^{\circ}5$ C.

The distribution of surface temperature in the North Atlantic is certainly very exceptional. A glance at the chart Pl. VII., representing the general distribution of heat for the month of July, shows that the isothermal lines for that month, instead of