

At this point, therefore, the ice-cold water of the Arctic current filling up the bottom of the trough is nearly 2,000 feet deep, while the temperate water above has nearly an equal depth. The lower half of the latter, however, has its temperature considerably reduced by intermixture and diffusion. Fig. 55 represents diagrammatically the general result of temperature observations in the cold area. The depth at the next Station, No. 65, was 354 fathoms, showing that the channel had begun to shoal towards Shetland; the temperature was, however, still low, almost exactly  $0^{\circ}$  C. The next Station, No. 66, eighteen miles further on towards the Shetland banks, gave a depth of 267 fathoms, with a bottom temperature of  $7^{\circ}6$  C., the temperature at the surface being  $11^{\circ}3$  C. We had therefore got beyond the edge of the trough filled by the cold stream, and passed into lesser depths occupied from the surface to the bottom by the warm southern stratum.

The next series of soundings, Nos. 67 to 75, are either in shallow water round Shetland, or in water on the shelving edge of the plateau, not deep enough to reach the frigid stream. It is of some interest that the two soundings, Nos. 68 and 69, in 75 and 67 fathoms respectively, to the east of Shetland, show a bottom temperature of  $6^{\circ}6$  C., while a serial sounding in the warm area at the western entrance of the Færoe Channel gives for the same depth a temperature of about  $8^{\circ}8$  C. This circumstance, along with others to be mentioned hereafter, would seem to show that a considerable indraught of cold water spreads over the bottom of the shallow north sea.

At Stations 76 to 86, which are along the southern