

attached to a length of patent sounding wire. The fan was 26 inches deep and 18 inches wide and weighed 16 pounds. In stronger currents, an additional weight was attached. The depth to which it was lowered was conveniently measured by a patent sounding machine. This simple appliance proved very serviceable to show the direction of the under-current at any depth. The inclination of the supporting wire also gave a close estimate of the speed, by means of a formula determined by experiment: the angle of inclination being measured with a clinometer.

*Density and temperature of the water.*—Extended observations of density and temperature were taken from the outset, on the courses after leaving Halifax, and during the season. This was done in the hope of tracing the movement of the water, as this method had proved so serviceable in the Gulf of St. Lawrence. The density of the water was taken at the surface only. The variation did not prove sufficient, however, to be relied upon as an indication of direction of movement. We do not publish the results therefore, though interesting in themselves.

The temperature was taken to a depth of thirty fathoms, by means of registering or inverting deep-sea thermometers. The thermometers used, either had Kew certificates, or were tested by comparison with standards. More was expected from the temperature than from the density, as it was hoped it would serve to trace the course of the Polar current. The nature of the results in this respect is given in describing the character of that current.

The depth of thirty fathoms was found sufficient, as the water was there at the freezing point throughout the region examined, both south and east of Newfoundland, during the whole season from May to September. All the change which took place during the progress of the season or from other causes, was between the surface and thirty fathoms. The change of the temperature of the water also afforded an interesting valuation for the amount of wind disturbance, and the depth to which it extended, under given conditions. This will be briefly referred to in its place. Some of the more important results of the temperature observations are given in the tables appended. (See page 28 and 29.)

*Wind and barometer.*—The wind-velocity was measured by an anemometer on board, and the direction was taken every half hour with the other readings. A recording barograph gave a continuous barometer record. These observations were essential to ascertain the effect of the wind on the current; and they were also useful at the time, as a careful look-out for bad weather had to be kept, because of the persistence of the fog.

*Tide.*—Observations were taken during the previous season of 1902, and throughout the present season, on a self-registering tide-gauge at Trepassey harbour. This afforded the time of high and low water for comparison with the set of the current; and the tide at other harbours further west, was deduced from this by the difference of 'Establishment.'

*Accessory observations.*—There was necessarily some interruption during the season in obtaining coal and other supplies. The courses run on such occasions were carefully taken and laid down on the chart, to ascertain any current effect which could be