In correcting for temperature, the coefficient of expansion was that given in the Report of the "Challenger" Expedition for standard seawater of specific gravity 10260. Although the rate of expansion is not the same for water of the various densities met with, the use of a constant coefficient gives results which are sufficiently close, as the actual correction required for a few degrees above or below 60° is always small; and on the other hand the differences in density are themselves so large as to be quite evident from the first few places of decimals. This method amounts to neglecting the secondary correction which results from the variation in the coefficient of expansion expressed as a function of the density. An exception was made in favour of the densities of the deep water already given; as for these a coefficient of expansion was determined by direct experiment to correspond with the actual range of density which these samples were found to have.

The general plan adopted was to take the density of the water along a series of sections, and at various depths between the surface and 50 fathoms; or as far down as the depth at which the coldest water had been found. Density sections of this character were first carried across from the Gaspé coast to Anticosti, and from Anticosti to the Mingan shore, to serve as a basis of comparison. The points at which the densities were taken along these section lines, were from three to seven miles apart, according as the density was found to vary more or less rapidly. A series of section lines were then laid out on the chart, to cover a belt of about 80 miles in width, extending entirely across the Gulf from the passage between Gaspé and Anticosti to Cabot Strait. These lines lay as nearly as possible from south-west to north-east, or across the direction which the water might be supposed to take ; and the sections were kended as far as was found necessary to define the areas occupied by the water of the various done in the day time ; and current observations and measurements were obtained for comparison at the night anchorages in the open Gulf. This work cocupied the month of August.

These section lines were run from the Gaspé coast to Anticosti; from the mouth of the Bay des Chaleurs to the Orphan Bank, and across to the east end of Anticosti; thence to the Magdalen Islands, and on lines running north-east and south-west from these islands; across Cabot Strait, and on parallel lines extending north-eastward from Cape Breton Island. Also in returning towards Gaspé, additional section lines were run from the west coast of Cape Breton to the Magdalen Islands and Prince Edward Island, to ascertain more definitely from what direction the water comes which flows past Cape North to the south-eastward. Several of the section lines in the vicinity of the Magdalen Islands and Anticosti were also run a second time to ascertain to what extent the results already found might be liable to disturbance, or whether they might be considered as permanet.

On account of the stormy character of the month of August, the determination of the deeper densities in some parts of the open Gulf were incomplete ; and it was found that a better general chart of the Gulf could be obtained from the surface densities only; as shown in Plate III. Also the area to the westward of the Magdalen Islands could not be completed on account of the time lost during gales ; but this omission does not affect the general result. In the region lying between Gaspé, Anticosti, and the Mag-dalen Islands, section lines were run at the commencement of the work, and a second time after an interval of five weeks. During this time very little difference was found in the general position of the density contours. In some cases, the lines given on the chart show their mean position, between their first and last determinations. It will be seen from this chart that the water of less density lies on the south-western side of the Gulf; and that the area it occupies is approximately limited by a line from South-west Point, Anticosti, to St. Paul Island, C. B. It is therefore in the direction of this line that any slow movement or set of a general character across the Gulf area must take place. It will be seen also that the water between Gaspé and Anticosti ranges in its surface density from 1 0210 to 1 0225, and that water of this density extends continuously across the Gulf to Cabot Strait on the south-western side of the line indicated; although the out-flowing water at Cape North has increased somewhat in density from the above as it there ranges from 1.0220 to 1.0235 at the surface. This can be safely

attributed to a grad Magdalen Islands 1 consequently the de which these contour against their north-

On comparing contours at a depth the west coast of Ci liable to disturbanc occasioned by the M to find its way rou North. The densi and the same lines given. The actual to the time of the o the comparison clee namely 16 days in c

Although there the leading features least along the west and in both cases t direction. The rela Magdalen Islands oo these charts alone; to say which of the For example, water to St. Paul Island, density intervening examined the furth current throughout

The best measu obtained from densi which were run twi August 12th to 15th miles an hour, and i of wind displaced th 15 miles at 10 fatho extended to the bot not be assumed how wind; as it may h wider areas. This i are to such problems of this will be given Plates IV and V, w *Direct observati* 

results obtained at i itself was in progres upon careful measur nature of the curren rent runs ; as this gi of the wind is alway velocities of the curr given on the 24 hour

Near the north ture Island. From 7th. Weather very hours; then changed