

can be applied in general practice to its present purpose without great modification. The instrument is bulky, and, with the battery, and galvanometer, and thermometers, and freezing mixture, troublesome to work on board a ship, and difficult to observe if there is any motion. The cable is bulky and tender, and would probably not stand the strain of being often used as a sounding-line.

Throughout this section Mr. Buchanan has taken the specific gravity of the sea-water from the surface daily, and from the bottom and from intermediate depths as often as it was possible to obtain samples. A description of the instruments used in procuring the water from the bottom and from intermediate depths, and for determining the specific gravity, has been already given (p. 47 *et seq.*).

I need only mention here that, on the voyage from Teneriffe to Sombrero, Mr. Buchanan found the remarkable and unexpected result that the water has virtually the same specific gravity from the bottom to within 500 fathoms of the surface. From 500 fathoms the specific gravity rapidly rises, till it usually attains its maximum at the surface. Some minor variations in the specific gravity, both of the upper and of the lower layers, have manifested themselves from time to time, but to these we shall refer hereafter.

In the table of specific gravities appended, one or two instances occur (marked with an asterisk on the table) in which the specific gravity is as great at the bottom as it is at the surface. In these cases we are forced to believe that by some misadventure the cylinder of the water-bottle became disengaged just as it reached the water. The lowering of the slip water-bottle requires some care until it is fairly beneath the surface, after which there is no chance of the cylinder falling until the instrument reaches the bottom.

In this our first section across the Atlantic, the dredge was lowered thirteen times, and nine times brought up a sufficient