

decreasing. These periodic changes, between a strong current running east and a much weaker one running west, are caused by the tides, which are strong enough to reverse the current. The tide-period being nearly twelve and a half hours, one might expect the turning of the current about 2 in the afternoon; at this time it was, however, still setting east, though with comparatively small velocity. It was thus only once in the day that the current at 10 metres ran out of the Mediterranean; in other words, there was a difference between the two tide-periods in the same day. It is probably connected with the so-called "daily difference" of the tide, well known in many places, which manifests itself by each alternate high-water being conspicuously greater than the intervening one. We must, however, bear in mind that these results, of course, only apply to the particular day on which the observations were made, and we must therefore beware of drawing general conclusions until observations during a longer period and at different times of the year are available.

On the preceding afternoon (29th April) we obtained from the life-boat some measurements of the velocity of the current at a depth of 5 metres. At 5.15 P.M. the velocity was 113 cm. per second (2.2 knots per hour), and was then on the increase, being more than 150 cm. per second (nearly 3 knots per hour) at 6 P.M., and the current then set eastwards. This corresponds to the increasing velocity eastwards at a depth of 10 metres half a day and a whole day afterwards. Some observations in the deeper strata were also made from the life-boat about 6 P.M. on the 29th April, the velocity at 25 metres being 124 cm. per second (2.4 knots per hour), and at 50 metres 138 cm. per second (2.7 knots per hour); at both depths the current set in a north-north-easterly direction. Unluckily the observations were then interrupted for many hours by the breaking of the anchor-cables, otherwise we should have had continuous observations during two whole tide-periods.

On the 30th April we obtained some series of measurements from the steamer down to the bottom in about 200 fathoms of water. The current often ran so fast that the wire with the apparatus was brought into a slanting position, and the first messenger was not sent down for some minutes to allow time for adjustment. This rendered the determination of depth somewhat uncertain; the depths quoted refer to the length of wire out, and may sometimes exceed the actual depth, but it was useless to apply corrections, as we did not know the lie of the line in the water. Fig. 194, 2, shows the current at 46