

worthy results can be obtained from a ship under sail, as even in the calmest weather the heave of the sea, or the surface current, is sufficient to drift the ship in a very short time a considerable distance from the place where the lead was originally let go. It is thus impossible to obtain a perpendicular sounding; besides the time intervals between the 100-fathom marks are upset, these time intervals being the only means of telling when the lead has reached the bottom.

The first thing, therefore, to be done is to shorten and furl all sail, and bring the ship head to wind, regulating the speed in such a manner as to avoid forcing her through the water.

The sounding apparatus is then got ready. A block is placed on the main-yard a little outside the boom iron, and a whip rove through it to trice up the accumulator (Fig. 1). These accumulators are india-rubber bands, $\frac{3}{4}$ inch in diameter and 3 feet in length. They are capable of stretching 17 feet, when they each exert a pressure of 70 lbs. Twenty pairs of these accumulators have been found sufficient for most of the soundings obtained, as they are strong enough to withstand the strain of the weights on the lead line without being too strong to give readily with the motion of the ship; their greatest use being to keep the

FIG. 1.

