

ing and resting on the bottom, the "ketch" drops over a conical end, and thus releases the weights, which remain at the bottom. The tube being larger than that of the "Hydra," it brings up a greater quantity of sample from the bottom.

These rods are only employed when the depths are considered to be over 1500 fathoms; for less depths a conical lead weight (Fig. 4) is used, which has fitted to its bottom an iron cylinder, 3 inches in diameter, with butterfly valves at its base for securing samples of the ocean bed.



The line used for sounding is 1 inch in circumference, and is specially prepared for this service (having a breaking strain of 14 cwt.); it is marked at every 25 fathoms, the 25- and 75-fathom marks being white, the 50-fathom marks red, and the 100-fathom marks blue. Worsted is used to mark the line, and the number of hundreds are distinguished by tucking the worsted under and over the strands of the line, one tuck for each hundred fathoms. This leaves the line perfectly smooth; no additional friction is caused in the water, nor is there any danger of the marks on the line fouling in the blocks through which it passes. The line is kept on reels (3000 fathoms on each) conveniently situated near the sounding-platform, from which it is led through a block to the