

of dredge have, however, their advantages, according to the animals it is desired to procure.

"Challenger"
trawl.

The "Challenger" used a trawl (Fig. 11) constructed like the ordinary beam-trawl, which was employed particularly by

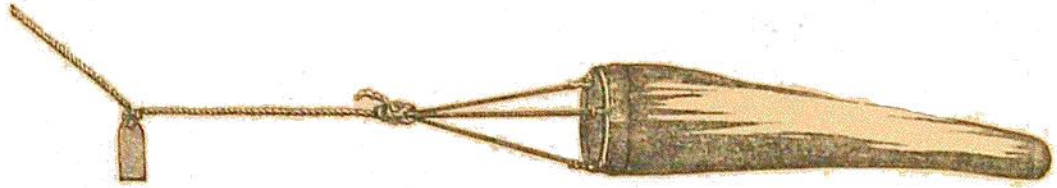


FIG. 13.—TOW-NET FIXED AT END OF LINE ("Challenger").

the fishermen in the shallow waters off the flat English coasts. The beams were of different lengths, 17, 13, and 10 feet, but the 10-foot length was found to be the best for deep water. It was, however, difficult to tell, when the depth was at all great, whether the trawl had reached the bottom right side up, and whether it was open while being towed. Sigsbee solved this difficulty by having tripping lines on both sides (Fig. 12); otherwise the size of his trawl was identical with that of the "Challenger," viz. 10 feet between the runners.

Sigsbee's appliances and methods of working were adopted by the "Valdivia" and other recent expeditions.

Pelagic
appliances
of the
"Challenger."

During the cruise of the "Challenger" the appliances used for making pelagic captures consisted of small nets resembling long night-caps, of fine muslin or calico, and 10 to 16 inches in diameter at the mouth. They were towed at various depths, even as far down as 800 fathoms, with a weight attached a little in front of the opening (Fig. 13), or they were sometimes made fast to the line (Fig. 14) and lowered to a depth of about 2 miles (over 3600 metres), the object being to ascertain whether or not organisms lived in the deeper layers of water different from those captured in the surface layers.

Since the time when the "Challenger" conclusively proved that life was present everywhere in the ocean, not only over the bottom at the profoundest depths, but also in the intermediate layers of water, much labour has been expended upon



FIG. 14.—TOW-NET FIXED ON THE LINE ("Challenger").