

its breaking-strain was 1 ton 12 cwt.; the 2½-inch rope weighed 158 lbs. per 100 fathoms, and its breaking-strain was 2 tons 6 cwt.; and the 3-inch rope weighed 220 lbs. per 100 fathoms, and its breaking-strain was 2 tons 11 cwt. In proportion to its weight, therefore, the 2-inch was the strongest rope, and this or the 2½-inch was used for deep trawlings or dredgings, the 3-inch rope being reserved for comparatively shallow water. The rope was spliced together so as to form one uninterrupted length of 4000 fathoms, and was kept coiled away in racks on the forecastle, each size of rope by itself. Sheep pens were used as racks for coiling the rope away, and were found very convenient for that purpose. When rope was first used in such great lengths, swivels were spliced in at each 500 fathoms to take the turns out, but it was found by experience that these swivels were of little use for this purpose, and that they frequently got jammed in the blocks, so they were discarded. The rope was marked at each 100 fathoms, in the same manner as the sounding lines.

*The Dredge* consisted of two parts, the iron framework which skimmed the surface of the bottom, and the bag or sack which caught and retained the skimmings. A third part was added by Captain Calver in H.M.S. "Porcupine," viz., the swabs at the bottom, but the dredge itself was complete without this appendage. The iron framework was oblong in shape (see fig. 19), having attached to each of its short sides an arm A, A. These arms were connected together with iron screw bolts B, B, B, and between them was an iron tongue C, with a swivel-ring D at its upper end, to which the dredge-chain was fastened. When not in use the arms were disconnected and fell down on the framework, so that the dredge could be stowed away in a small space, a great advantage on board ship. On each of the long sides of the iron framework was a broad knife-edged piece of iron E, E, E, at an angle of about 10° from the perpendicular, intended to skim the surface off the bottom and throw it into the sack. The sack F was made of network of soft line (something like marline) in very small meshes, the size of the sack depending, of course, on the size of the framework. It was lined inside with cotton cloth or "bread-bag stuff" so as to prevent minute animals being washed out whilst heaving in, and it was secured to the framework by a lacing, eyelet holes being made at regular intervals in the framework for this purpose.

Under the sack an iron bar G, G was secured to the bights of two pieces of rope H, H the ends of which were spliced on to the framework on either side. On the bar G, G flat headed swabs K, K, K, K were hung, so that, trailing along the ground, they might entangle any animals missed by the dredge after it had become choked with mud. To prevent the rope chafing, five or six fathoms of chain were, in the first place, attached to the dredge and the rope secured to this, the ends of this chain were hitched to one of the short sides of the frame and the bight seized to the ring D, so that if the dredge caught a rock, the seizing carrying away would give a better chance of its recovery.

The iron framework of the largest dredge was 5 feet in length, 1 foot 3 inches in