

The Tow-Nets.—The nature and source of the deposits at present in process of formation on the bed of the ocean was one of the most interesting problems with which we had to deal, and we soon found that while over a large part of the area of the ocean the deposits consisted mainly of the hard parts of animals, the closest relation existed between the animals included in the bottom deposit of any particular area, and the fauna of the over-lying water of the same area. This observation, which we had daily opportunity of repeating and verifying, gave a special interest to the study of the fauna, principally microscopic, of the surface and of intermediate waters; and observations with the tow-net were prosecuted by Mr Murray with the utmost perseverance and care throughout the voyage, so that almost every sample of the bottom taken from the sounding-tubes is supplemented in our collection by a bottle of surface organisms from the same spot preserved in spirit; and in many cases by a series of such specimens taken from different depths.

The tow-nets were of the ordinary form, conical bags suspended from rings. The rings were made of $\frac{3}{8}$ -inch round rod-iron, and were 12, 14, 16, and 18 inches in diameter. They were painted and then covered with unbleached cotton or duck, with a margin of the cloth left at one side to which the bag could be sewn. The nets were of fine book-muslin, of cotton bleached or unbleached, or of buntine. A ring 12 or 14 inches across bore a net 4 feet 6 inches long, and for wider rings the length of the net ran up to 5 feet 3 inches. The net tapered from the ring to a width of 16 inches at the bottom, into which a disk of the muslin or other material was sewn to facilitate the transfer of the contents of the bag into a glass jar. Three cords, $\frac{3}{8}$ ths of an inch round, were made fast to the ring at equal distances and met 4 or 5 feet in front of the ring in a loop to which a suitable length of sounding-line was attached for dragging the net. A muslin bag was used when we were moving very slowly—less than two knots an hour—through the water; when we were going faster the stronger or more open (buntine) net was employed.

When it was wished to sink a tow-net a short way beneath the surface, a hand-lead of 12, 14, or 20 lbs. was fastened to the line a few yards in advance of the net, and the faster the ship was moving through the water the heavier was the weight used. Sometimes two or three nets were attached to one line at various distances along it, and sometimes nets were attached at different points along the dredge-rope during its descent; but these attempts to take samples of the fauna from different horizons were rarely successful, and we found that by far the best way, both at intermediate depths and at the surface, was to use a single net at the end of the line and to tow it as slowly as possible. The tow-net is most readily worked from a boat; when the ship was going more than three or four knots it was found impossible to use it with advantage. The tow-net was emptied by putting the hand as far into the bag as possible and turning the end of the bag inside out in a large glass vessel of sea-water, and shaking it well without touching its contents.