

preserved in pure spirit, especially when the last change of spirit has nearly the strength of absolute alcohol. Our method usually was to plunge the animals direct from the dredge or trawl into spirit of about 84 to 85 per cent. (the ordinary rectified spirit of commerce). This, of course, became at once greatly diluted by the sea-water contained in the animals. After a few hours the specimens were sorted out and roughly examined and entered in the station-book. They were then packed in the store-bottles, a small number in each bottle, prevented from crushing one another by a loose padding of stiff paper or curled horse-hair, and the bottles filled up with 85 per cent. spirit. Most species will now keep perfectly if the bottles are not over-crowded, or the animals very deeply coloured; if, however, the specimens are of large size and contain much fluid or pigment, the spirit must be changed again, or even twice or thrice. It was a great advantage to us that we had the spirit duty-free so that we could use it pure instead of methylated. It is unpleasant and unwholesome to work much among the fumes of methyl, and I am satisfied that structure is not so perfectly preserved in methylated as in pure alcohol.

The Steam Pinnace.—Two of the CHALLENGER's boats, the Pinnace and the Barge, were provided with engines suitable for sounding and dredging. The Barge was seldom used, but the Pinnace was found very valuable for dredging or trawling in shallow water, and in a smooth sea. She was a lifeboat 36 feet in length, with two pairs of engines, one pair for propelling her, and another for heaving in the dredge-line. The propelling engines were a pair of high-pressure direct-acting vertical engines of six horse-power (nominal), with a horizontal tubular boiler, and a disconnecting shaft and screw. At full speed the engines travelled at about 240 revolutions a minute, and on the trial for speed over the measured mile the boat averaged eight knots an hour. The dredging engines were fitted to the top of the boiler; they were a direct-acting horizontal pair, the cylinders at the after end of the boiler, and the crank-shaft forward. The shaft extended beyond the boiler on both sides, and at each end a drum was fixed. The drums were constructed with two sheaves, and to the larger or the lesser of these the dredging line was led.

THE PREPARATION OF THE REPORT, AND THE TEMPORARY AND THE FINAL DISPOSITION OF THE SPECIMENS.

When I accepted the responsibility of the scientific direction of the CHALLENGER expedition I had already considerable practical experience in such work; and I had an idea of the amount of material in marine zoology which we might hope to accumulate if we were even moderately successful. I was also well acquainted with the often unsatisfactory history of similar expeditions, as I had more than once had occasion,