

the vastness of its expanse, the depth is, nevertheless, so great as to be difficult of adequate realisation. The greatest depth as yet ascertained by sounding occurs, as will be seen from the map at the commencement of this work, in the North-West Pacific Ocean; it amounts to about five miles and a quarter.

In order to realise such a depth, the reader should think of a spot distant several miles from his actual position, and then attempt to project the distant point downwards, until it lies vertically beneath him. The average depth of the ocean between lats.  $60^{\circ}$  N. and  $60^{\circ}$  S.\* is about three miles or 2,500 fathoms. The great depth of five miles occurs only exceptionally over very small areas.

The vastness of the depth of the Ocean was constantly brought home to us on board the "Challenger" by the tedious length of time required for the operations of sounding and dredging in it. When the heavy sounding weight is dropped overboard, with the line attached, it takes about an hour and a quarter to fall to the depth of 4,500 fathoms, and thirty-five minutes to reach the bottom in the average depth of 2,500 fathoms.

The winding in of the line again is a much slower process. It used to take us all day to dredge or trawl in any considerable depth, and the net usually was got in only at nightfall, which was a serious inconvenience, since we could not then, in the absence of daylight, make with success the necessary examinations of the structure of perishable animals.

The ship, when deep-sea operations were going on, used to lie rolling about all day, drifting along with the wind, and dragging the dredge over the bottom. From daybreak to night the winding-in engine was heard grinding away with a painful noise, as the sounding-line and thermometers were being reeled in.

At last, in the afternoon, the dredge-rope was placed on the drum, and wound in for three or four hours, sometimes longer. Often the rope or net, heavily weighted with mud, hung on the bottom, and there was great excitement as the strain gradually increased on the line. On several occasions the rope broke, and the end disappeared overboard; three or four miles of rope and the dredge being thus lost.

At first, when the dredge came up, every man and boy in the ship who could possibly slip away, crowded round it, to see what had been fished up. Gradually, as the novelty of the thing wore off, the crowd became smaller and smaller, until at last only the scientific staff, and usually Staff-Surgeon Crosbie,

\* J. J. Wild, "Thalassia," pp. 14, 15. London, Marcus Ward & Co., 1877.