

NUMBER OF
INDIVIDUALS OF
ONE SPECIES IN
DEEP-SEA
TRAWLINGS.

There were over thirty specimens of the little sea-urchin, *Urechinus naresianus*, in the trawl at Station 146 in 1375 fathoms, but as a rule, in the Challenger trawlings deeper than 1000 fathoms, it was unusual to take more than four or five specimens of any one species in a single haul. Indeed, a great number of genera as well as species, in proportion to the number of specimens, is the marked peculiarity of these hauls in very deep water. In depths less than 1000 fathoms, and especially in depths less than 500 fathoms, immense numbers of individuals, all belonging to the same species, may be captured in a single haul. At Station 166, in 275 fathoms, the specimens of *Pandalus magnoculus* were so very numerous that they were served on the ward-room table. In 555 fathoms in the Faroe Channel over four hundred specimens of *Lætmogone violacea* were procured in a single haul. The only other known specimens of this species were captured by the Challenger at the very antipodes in 410 fathoms off the east coast of Australia. In the Faroe Channel the "Triton" also captured in a single haul of the trawl, from a depth of 540 fathoms, over one thousand specimens of Pycnogonids, chiefly belonging to one species of *Nymphon*. Similar instances might be mentioned in which large numbers of *Rossella*, *Euplectella*, and other organisms, all belonging to one species, were taken in single hauls in depths between 100 and 300 fathoms.

COMPARISON OF
DEEP-SEA AND
SHALLOW-WATER
HAULS WITH THE
TRAWL.

It is interesting to compare single hauls made in the deep sea and in shallow water with respect to the number of different species obtained. For instance, at Station 146 in the Southern Ocean, at a depth of 1375 fathoms, the 200 specimens captured belonged to 59 genera and 78 species. The trawl made use of had only a 10-foot beam. In working at such a depth it is not possible to say how long or for what distance the trawl had been dragged over the bottom,—two hours, and a distance of two miles, would probably be an excessive estimate. In depths less than 50 fathoms, on the other hand, I cannot find in all my experiments any record of such a variety of organisms in any single haul, even when using much larger trawls and dragging over much greater distances. The statistics of the Scottish Fishery Board's trawlings in the North Sea, with a 25-foot beam in depths less than 80 fathoms, show the average catch per haul of many trawlings to be 7·3 species for invertebrates and 8·3 species for fishes, the greatest number of both invertebrates and fishes recorded in any one haul being 29 species.¹ My own trawlings off the west coast of Scotland, in depths between 40 and 100 fathoms on muddy bottoms, gave usually a much greater number of species per haul than this, sometimes as many as 50 species, still not such a great variety of animals as was procured in many instances by the Challenger's small trawl in great depths.

The great abundance of both individuals and species in deep water, and the peculiar adaptations among deep-sea animals to the conditions of their existence, all point to the

¹ I am indebted to Dr Fulton of the Scottish Fishery Board for these particulars.