

THE NATURE AND DISTRIBUTION OF THE FAUNA OF THE DEEP SEA.

The special character of the fauna of the deep sea, so far as it is at present known, the sources from which it may have been derived, and its relations to the fauna of shallower water and of the fauna of past periods of the earth's history, will be discussed in detail in the summary of general scientific results, which will form the last volume of this report; it may be convenient, however, to give in this place a preliminary sketch of its general nature and scope; that the reader may form some idea of the relations, extent, and relative importance of the groups treated in the following memoirs, and of the conditions under which they severally occur.

The Absence of a Depth-Limit to Life.—The most prominent and remarkable biological result of the recent investigations is the final establishment of the fact, that the distribution of living beings has no depth-limit, but that animals of all the marine invertebrate classes, and probably fishes also, exist over the whole of the floor of the ocean.

My present impression is, that although life is thus universally extended, the number of species and of individuals decreases after a certain depth is reached, and that at the same time their size usually diminishes. This latter observation is not, however, true for all groups; a peculiar family of the HOLOTHURIDEA, the Elpididæ (fig. 13), very widely distributed in deep water and found at the greatest depths, maintain the full dimensions of the largest of their class, and even exhibit some forms of unusual size. On two occasions in the North Pacific we brought up, from depths of 1875 and 2900 fathoms respectively, a species of *Monocaulus*, a tubularian hydroid allied to *Corymorpha*, a giant of its order, with a stem upwards of 7 feet high, and a head nearly a foot across the crown of expanded tentacles.

Of the value of our present impressions on any question relating to the nature, or the relative abundance, or the relative size of the animals constituting the fauna at depths approaching 3000 fathoms, I am by no means sure. Using all precautions, and with ample power and the most complete appliances, it is extremely difficult to work at such

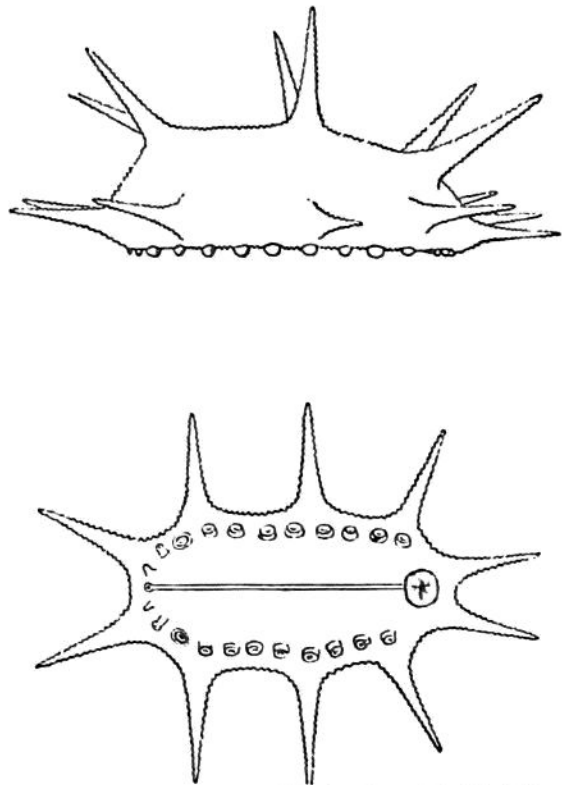


FIG. 13.—*Deima fastacum*, Thél. One of the Elpididæ.