

SUMMARY OF THE REPORT.

1. Of the forty-one species of Pycnogonida dredged during the voyage of H.M.S. Challenger and the cruise of the "Knight-Errant" thirty-three are new to science.

2. Of the nine genera represented in those collections three are new.

3. Those genera which range most widely geographically are also those which range most widely in depth.

4. There are deep-sea species, but true deep-sea genera do not seem to exist.

5. The Pycnogonida form a distinct and very natural group (class) of arthropodous animals. Their common progenitor (their typical form) must be considered as a hypothetical Pycnogonid with three-jointed mandibles, multi-jointed palpi, and ovigerous legs with numerous rows of denticulate spines on the last joints.

6. This class of the Arthropoda may be thus characterised:—Arthropoda breathing by the general surface of the body, which body consists of a cephalothoracic, three thoracic segments, and a rudimentary abdominal segment. The cephalic part of the cephalothoracic segment bears anteriorly a proboscis, consisting of three coalesced parts, one præ-oral (labrum?), two post-oral ones (mandibles?), and three pair of cephalic appendages, the first two of which in the adult state sometimes have become rudimentary, the third pair being always present at least in one of the two sexes. The first pair of these appendages represents the antennæ, the two others are post-oral. The thoracic part of the cephalothoracic segment and the three thoracic segments are each furnished with a pair of long eight-jointed legs, into which the alimentary canal sends off long cœca.

7. The function of the integumentary cavities is primarily respiratory.

8. The typical form of the nervous system shows a supracœsophageal and five thoracic ganglia. The supracœsophageal ganglion gives off the nerves for the mandibles (antennæ), the integumentary nerves, and a strong nerve for the proboscis. Besides these it probably gives off nerves for the intestine (sympathic nerves). The first thoracic ganglion consists of two coalesced ganglia, and gives off four pairs of nerves, two pairs innervating the proboscis, then the pair of palpar nerves, and finally those for the ovigerous legs. The following four ganglia give off the nerves for the four pairs of legs; the last ganglion gives sometimes two sometimes one pair of nerves for the abdomen.

9. In addition to the nerves mentioned above the proboscis is innervated by three strong bundles of nerves and ganglia united by a stronger and some feebler secondary œsophageal nerve rings.