

The genus *Macrophthalmus* (Fig. 50) has already been mentioned (p. 69) as having a superficial resemblance to the Portunid *Podophthalmus*.

The members of the family *Pinnotheridae* are small parasitic or commensal Crabs, living in the mantle-cavity of bivalve Mollusca, in Ascidians or Echinoderms, or in coral-stocks. The shell is usually soft, and the eyes, antennules, and antennae much reduced. A preparation is exhibited of a Sea-Urchin, *Strongylocentrotus gibbosus*, found on the coast of Chile. One half of the shell has been cut away to show the Crab *Pinnaxodes*

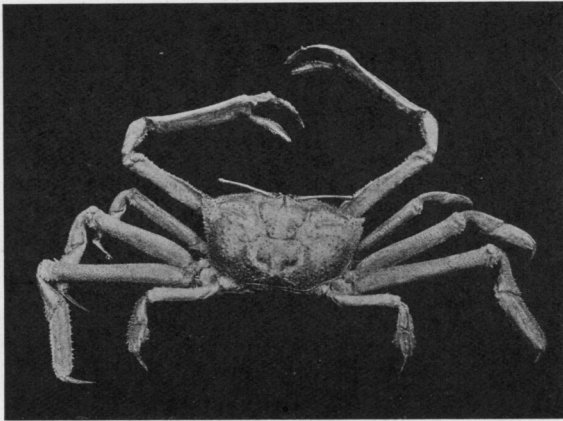


FIG. 50.

*Macrophthalmus pectinipes*, reduced. [Table-case No. 16.]

*chilensis* lying in a large pouch which is formed by enlargement of the terminal part of the Sea-Urchin's intestine.

The family *Gonoplacidae* includes Crabs that in many respects approach the tribe Cyclometopa. The only British species is *Gonoplax rhomboides*.

The small Crabs included in the family *Hymenosomidae* have a more or less triangular front, and in other respects show some resemblance to the Oxyrhyncha. *Halicarcinus planatus*, of which specimens obtained by the *Discovery* Expedition at the Auckland Islands are exhibited, is found throughout the whole of the "Sub-Antarctic" region, occurring at such distant points as the Falkland Islands, the Cape, Kerguelen Island, and New Zealand.

## Class 2.—TRILOBITA.

(Table-case No. 17.)

The members of this class are known only in the fossil state, and are characteristic of the strata of the Palaeozoic era. They are especially abundant in the Silurian and pre-Silurian rocks. On the whole, they seem to be most closely related to the Crustacea, although they have been supposed to have affinities also with the Arachnida and especially with the Xiphosura or King Crabs. The somites of the body are variable in number, each, so far as is known, being provided with a pair of append-

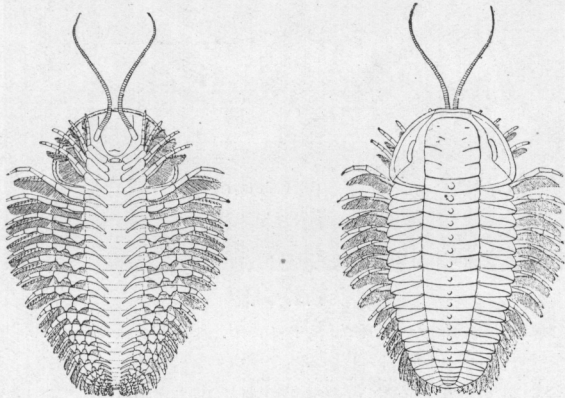


FIG. 51.

Reconstruction of a Trilobite, *Triarthrus becki*. Slightly enlarged (after Beecher).

ages which, with the exception of the pre-oral pair, are substantially similar in structure and function.

The dorsal plates of the five somites composing the anterior region of the animal (the "head" or prosoma) are fused to form a carapace or "cephalic shield"; its median area is vaulted, and each of the lateral areas is expanded, laminate, and divided by a groove into an inner and an outer portion; upon the latter a large compound eye is present.

The somites of the middle portion of the body (thorax or

mesosoma), which vary in number from two to as many as twenty-nine, were movably jointed together in the living animal. Each consists of a vaulted dorsal area (the tergum), and a flat membranous ventral area (the sternum), and, on each side, a laminate expansion overlapping the greater part or the whole of the legs. The convexity of the terga and of the upper surface of the lateral laminae gives to the body a three-lobed appearance, from which the name Trilobita is derived. The dorsal and lateral plates of the somites of the posterior region of the body (pygidium or metasoma) are immovably united, although generally defined by transverse grooves.

The appendages of the first pair, where known, are long, unbranched, antenniform limbs. Those of the remaining pairs consist of two branches rising from a common basal segment. The external branch is slender, many-jointed, and furnished with a series of flattened filaments; the internal branch, constituting the locomotor portion of the limb, consists of six or, including the basal segment, seven segments. The post-oral appendages of the prosoma resemble those of the rest of the body, except that the inner extremities of the basal segments are toothed to act as jaws.

The Trilobites probably resembled the existing King Crabs in habits, and crept about the bottom of the sea, feeding upon worms and other soft animal organisms, which were crushed between the basal segments of the anterior appendages. On account of the softness and membranous nature of the sternal region they were able to double up the body or roll it up in a sphere, like wood lice (as shown by two of the specimens of *Calymene blumenbachii* in Table-case 17); and this habit, coupled with the strong spines with which the dorsal area was frequently armed, suggests that the Trilobites themselves were in need of protection from more powerful inhabitants of the seas.

About 2,000 species have been described from Cambrian and later beds of the Palaeozoic period, at the close of which the group became extinct.

A restoration and drawings of *Triarthrus becki* and a few specimens and casts of other Trilobites are exhibited in Table-case 17. The attention of those who are interested in these Arthropods is directed to the account of them which appears in the "Guide to the Fossil Invertebrate Animals," and to the series of specimens displayed in the Geological Department (Gallery 8, Table-case 25, Wall-case 14 b).

### Class 3.—PYCNOGONIDA.

(Table-case No. 26.)

The Pycnogonida, Pantopoda, or Podosomata, are a small group of marine animals, here treated as a separate class. They may be related to the Crustacea, although their affinity with that group of animals is by no means close, and they show many points of resemblance to the Arachnida.

The body (Fig. 52) consists, as a rule, of a head-segment, followed by three free somites and a small terminal lobe repre-

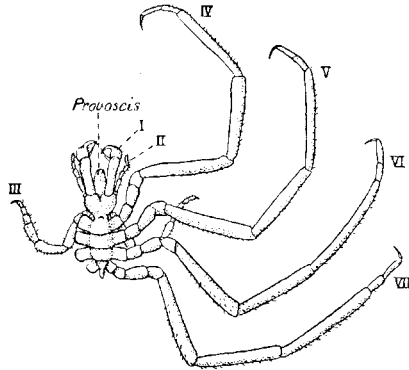


FIG. 52.

Diagram of a Pycnogonid, *Nymphon (Boreonymphon) robustum*. Enlarged.  
[Table-case No. 26.]

sented the abdomen. Four pairs of very long legs (IV.-VII.) are attached, the first to the head-segment, and the others to the three free somites. In addition the head-segment may bear three pairs of appendages; the first pair (I.) are chelate (or pincer-like), and overhang a tubular proboscis on which is the opening of the mouth; the second pair (II.) are sensory palps, placed at the sides of the proboscis; the third pair (III.), placed just behind the last, are used, in the male sex, for carrying the eggs, and are known as "ovigers." One or other of the first three pairs, or (in the female sex) all of them, may be absent in certain genera.

The apparent resemblance of a Pycnogonid to an Arachnid is due chiefly to the four pairs of long and slender legs, and to the chelate form of the first pair of appendages. The comparison, however, is complicated by the fact that the Arachnida possess but one pair of appendages, the pedipalps, between the chelicerae and the first legs, whereas the Pycnogonida have two pairs, the palps and the ovigers, in the same position. A further serious difficulty in the way of comparison is raised by the existence of three genera, *Decolopoda* (Fig. 53), *Pentanymphon* and *Pentapycnon*, which have five, instead of four, pairs of legs, and four free somites behind the head.

The internal structure presents many exceptional features,

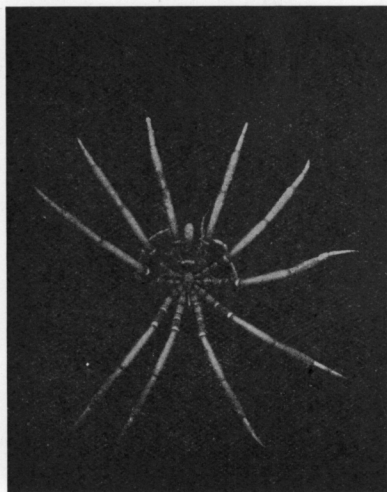


FIG. 53.

*Decolopoda australis*, a ten-legged Pycnogonid from the Antarctic Seas.  
Slightly reduced. [Table-case No. 26.]

which are illustrated by the drawings exhibited above the Table-case. The food-canal sends long diverticula into the appendages, and the generative glands also are partly situated in the legs and open to the exterior by pores on the second segments of some or all the pairs. A remarkable fact in the breeding habits of these animals is that the eggs are carried, after deposition, not by the female, but by the male, attached in clusters to the third pair of appendages.

The Pycnogonida are all marine animals, ranging from shallow water to depths of at least 2,000 fathoms. They are especially abundant in the Arctic and Antarctic regions. The specimens exhibited include *Pycnogonum littorale*, which is common between tide-marks on the British coasts; *Nymphon* (*Boreonymphon*) *robustum* (Fig. 52), a characteristic Arctic species; two species of the deep-sea genus *Colossendeis*, which includes the largest of the Pycnogonida; and the ten-legged *Pentanympyon* and *Decolopoda* already alluded to.

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