

might be expected, for it is known that the supply of oxygen is diminished at great depths, and in many other deep-sea animals the respiratory surface is apparently increased with the object as it were of counterbalancing this diminution in the supply. I am, therefore, led to the conclusion that this character is an ancestral one, and that certain at least of the Paguroidea are the descendents of *Macrura* in which the gills were trichobranchiate. This view is partly supported by the fact that in *Pylocheles*, A. Milne-Edwards, a deep-water genus which is represented by a single species in the collection, and retains to a remarkable extent the primitive Macruran characteristics, the gills have essentially this structure.

The other structural modifications met with in the deep-water Pagurids are comparatively few and unimportant. The eyes as a rule are slightly reduced in size, but in all cases they are pigmented and apparently functional, a fact which would lead us to suppose that the Paguroidea have spread more recently into deep water than the Galatheidea. The most characteristic genus is *Parapagurus*, S. I. Smith, the species of which appear to live invariably in a state of commensalism with an Anemone, which exerts a solvent action on the shell originally taken possession of by the Hermit, so that in many cases the latter is merely protected by its clinging messmate. I have failed to detect a single instance in which a shell had not apparently been present at one time. In all the females which I have examined the genital opening of the right side is apparently absent, a peculiarity which doubtless coincides with a deficiency in the internal reproductive organs, though I have been unable to satisfy myself on this point. One of the species, *Parapagurus abyssorum*, A. Milne-Edwards, appears to be almost universally distributed at great depths, affording a noticeable instance of the greatly extended distribution enjoyed by many abyssal species.

The Pagurid which I have described under the name of *Tylaspis*, and which occurred at a depth of more than 2000 fathoms, is remarkable chiefly for the fact that its gills have essentially the ordinary phyllobranchiate structure, though the characters of the carapace and abdomen are also sufficiently marked. *Paguroopsis*, another of the new genera, also presents several features of extreme interest. It is distinguished by the large size of its eyes, and by two characters in which it stands apart from all other Pagurids, viz., the last two pairs of thoracic legs are subdorsal in position, and the unpaired abdominal appendages occur on the right side.

It is, however, among the Galatheidea that the largest proportion of deep-water forms is found.

The Porcellanodea, or more highly specialised Galatheids, are almost confined to shallow water, but a new species (*Porcellana robertsoni*) was taken in the West Indies at a depth of 390 fathoms, which in all probability marks approximately the extreme vertical limit of the group.

The Galatheidea, on the other hand, are found abundantly to a depth of about 2000