

This family consists of several genera, dependent rather on their external characteristics than on their branchial arrangement, as may be seen by the following table:—

	Pleurobranchiæ.	Arthrobranchiæ.	Podobranchiæ.	
<b>NORTHERN HEMISPHERE—</b>				
<i>Cambarus</i> , . . . . .	0	11	6	East North America.
<i>Astacus</i> , . . . . .	1 + 2r	11	6	West North America, Europe and Asia.
<b>SOUTHERN HEMISPHERE—</b>				
<i>Astacoides</i> , . . . . .	1	5 + 5r	6	Madagascar.
<i>Parastacus</i> , . . . . .	4	10 + 1r	6	South America.
<i>Paranephrops</i> , . . . . .	4	10 + 1r	6	New Zealand.
<i>Astacopsis</i> , . . . . .	4	11	6	Australia
<i>Engæus</i> , . . . . .	4	11	6	Tasmania.
<i>Cherops</i> , . . . . .	4	11	6	Van Dieman's Land.

These two groups correspond with *Astacus* and *Astacoides* of most authors, and with those of Dana, excepting that he eliminates *Paranephrops* from the latter, and places it near to the marine genus *Nephrops*.

With regard to the genera there is no species from the northern hemisphere in this collection, and only three from the southern group, and these belong to the genus *Astacopsis* (Huxley).

*Geographical Distribution.*—The range of this family is peculiar, the several genera being adapted each to its own locality, no two genera being known to exist in one habitat. Several species of *Astacus* have been found in many of the rivers of Europe and Asia, the islands of Japan, and, according to Faxon, five species exist in rivers in North America, west of the Rocky Mountains, as first noticed by Dana; whereas on the authority of the same writer fifty-two species of *Cambarus* inhabit most of the rivers and lakes of North America east of the same range of hills.

Geologically *Cambarus* has been found as early as the lower Tertiary deposits of the Bear River Valley, Western Wyoming, in North America, and *Astacus* in the Cretaceous beds of Europe, and approximating genera such as *Eryma* in still earlier formations.

*Development.*—The young quits the ovum in the Megalopa stage, having all its appendages present in a more or less perfect condition. This was shown by Rathke<sup>1</sup> in 1829, to whose account little has since been added.

Dr. Hagen<sup>2</sup> says, "it is easy to discriminate between the sexes of very young individuals of *Cambarus clarkii*. This is the case with those only 0·3 inch long, and while they still occupy the postabdomen of the mother. In the females the sexual aperture is visible at the base of the third set of legs. The first abdominal segment is without any appearance of abdominal legs; in all the other segments the abdominal legs are well developed, their length being nearly two-thirds of the breadth of the post-abdomen, the basal article being oblong, while the length of the double flagellum is a little greater."

<sup>1</sup> *Entwicklung des Flusskrebses*, 1829.

<sup>2</sup> *Monograph of the North American Astacidæ*, p. 142.