

Affinities of the Arachnoid Entomostraca.—Much doubt has existed with reference to the place of the species in the subkingdom Articulata, whether they belong with the Arachnida or Crustacea. Johnston, Edwards, Kröyer, and Quatrefages, arrange them with the Crustacea, though Edwards* observes, that he does it with much hesitation; while nearly all the earlier authors, with Latreille,† and more lately Erichson, have placed them among Arachnida.

The Articulata are naturally divided into two parallel series—one consisting of species fitted especially for terrestrial life, and using the air directly in respiration, and the other fitted for aquatic habits, and using the water in respiration. Among the former, there may be aquatic species; but the mode of respiration is still but a slight modification of the general type for the group. So there are terrestrial species in the second division; but these have the same organs essentially as the aquatic, and require moisture in the air in order to carry on their functions of respiration. Crustacea in the second division are parallel with Insects and Arachnida in the first; while Annelida in the second, are analogues of Myriapoda in the first.

The Pycnogonoidea are those aquatic species that most resemble Arachnida. Yet along with the resemblance, there is the grand distinction which lies between the two sections of Articulata above explained. The mode of respiration is Crustacean; it is aquatic in *type*, and not merely by adaptation. In Crustacea, respiration takes place by means of the surface of some part of the body, or of its appendages, these parts having thin integuments, so as to allow of the circulating fluid taking air from the water in which the parts are bathed; some species have proper gills, others lamellar appendages to the thoracic or abdominal legs, others expose only the surface of the body for this action. Of this last class are nearly all the Entomostraca, and with them the Pycnogonoids.

On this ground these species are properly arranged with Crustacea, and among them they have their closest analogies, although presenting other relations to the Arachnida.

Structure.—Kröyer has drawn out an excellent general view of the succession of parts in the species of this group.

They are as follows:—

* Edwards, Crust., i. 230, iii. 530.

† Cuvier's Animal Kingdom.