

The Articulates having jointed limbs, including the terrestrial species and Crustaceans, are now generally removed from the Worms, and placed in a separate grand division, called *Arthropods* (from the Greek *ἄρθρον*, *joint*, and *πούς*, *foot*). But the typical Worms and the Arthropods are alike in consisting of a series of segments, each normally having its nervous ganglion; and in this fundamental feature, which is more important than their differences, both sections are far removed from Mollusks and Brachiopods, which are non-articulates, the body and its appendages having no joints. On this account the old division of *Articulates* still has importance. The relations of Insects are even closer, structurally and embryologically, to Worms, than to Crustaceans, notwithstanding their jointed limbs. This relation of Insects to Worms is shown by the resemblance of the larves to Worms; while Crustaceans, by the same evidence, are proved to be most nearly related to the precursors of Worms.

The grander divisions of Invertebrates are as follows:—

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| ARTICULATES.     | { | 1. ARTHROPODS.<br><i>a.</i> The terrestrial or Tracheate species :<br>1. <i>Insects</i> ; 2. <i>Myriapods</i> ; 3. <i>Arachnids</i> .<br><i>b.</i> The aquatic or Branchiate species :<br>4. <i>Limuloids</i> ; 5. <i>Crustaceans</i> .   |
| NON-ARTICULATES. | { | 2. WORMS.<br>3. MOLLUSKS ; 4. MOLLUSCOIDS (including Brachiopods and Bryozoans). The non-segmented Worms might here make another subdivision.   |
| RADIATES.        | { | 5. ECHINODERMS.<br>6. CŒLENTERATES, including <i>Hydrozoans</i> (or Medusæ and Hydroids), and <i>Actinozoans</i> (or Polyps).<br>7. SPONGIOZOANS, or the animals of the Sponges.<br>8. PROTOZOANS, <i>Amœboids</i> , <i>Rhizopods</i> , <i>Radiolarians</i> , <i>Monads</i> , and other <i>Flagellates</i> , etc. |

### 1. Arthropods.

The TRACHEATES have spiracles (breathing-holes), a vascular system for inside air-circulation, and one pair of antennæ, or none; they include Insects, Myriapods, Arachnids.

The BRANCHIATES have gills for the aëration of the circulating fluid, or perform this function through the general surfaces of the body or its foliaceous appendages. The species are Crustaceans, Limuloids, and Pycnogonids.

#### 1. *Insects*.

Having the body in three parts, that is, a distinct head, thorax, and abdomen; and only three pairs of legs: as Hymenoptera (Ants, Bees, Wasps); Lepidoptera (Butterflies, Moths); Coleoptera (Beetles); Diptera (Flies); Neuroptera (Dragon-flies, May-flies); Orthoptera (Grasshoppers, Locusts, Cockroaches); Hemiptera (Cicada, Squash-bug, Aphis); Thysanura (Podura, Lepisma).

#### 2. *Myriapods*.

Having a worm-like form, regularly articulate body, and numerous pairs of legs; part have the body flattened, and one pair of legs to a segment or somite, the *Chilopoda*, which include the *Scolopendra* and other Centipeds; and others have the body nearly cylindrical, and two pairs of legs to a segment, the *Diploöpoda*, which include the Iulids and other Millepedes.