Sub-kingdom ARTICULATA *Cuv.*

= *Annulosa* Mac Leay, = *Diploneura* Grant, = *Homogangliata* Owen.

The most striking external characteristic of the multitudinous forms included in this sub-kingdom, is the division of the more or less indurated integument into a succession of transverse ring-like segments. All animals with jointed bodies belong to it, but a few members of the group (e. g. the *Cirripedia*) scarcely shew this character, and they have accordingly been separated from what we now know certainly to be their true allies, even by such observers as Cuvier and Lamarck. One unvarying characteristic of the entire group is, however, to be found in the disposition of the nervous system, which distinguishes them completely from the preceding group of so-called radiated animals, and from the next higher group, or mollusca. From this consideration it is that Grant and Owen have named the division. One pair of principal ganglia (representing the brain of vertebrate animals in function and position) is *dorsally* placed *over* the œsophagus at the anterior end, supplying nerves to all the higher senses—taste, smell, hearing, sight, the antennæ, &c.; from these, two cords surround the œsophagus, and form two parallel lines along the ventral aspect of the body, and on these are symmetrically placed numerous, nearly equal, ganglia, usually one pair for each segment of the body; generally speaking, the lower the type the greater the number of segments in the body and of ganglionic centres, while the higher the type (whether we speak of adult conformation, or the progress of metamorphosis) the greater becomes the nervous centralisation, the ganglia coalescing as it were from behind, as the joints of the body diminish in number; as the ganglia decrease in number they increase in size, and the intelligence and physical perfection of the creature increase in a corresponding ratio.

The sub-kingdom Articulata includes the five following classes:—1, *Annellida* (or *Annulata*); 2, *Myriapoda*; 3, *Insecta*; 4, *Arachnida*; 5, *Crustacea*.

1st Class, ANNULATA.

The animals of this class have long vermiform bodies, composed of a great number of only moderately indurated annular segments, only differing from each other in size, except the first, which contains the jaws, and generally eyes, and often antennæ for touch, and the last, which is perforated by the anus; each of the other rings usually is furnished with setæ for locomotion, but never provided with articulated legs; the blood is red, not (as some writers suppose) from red globules, as in the *Vertebrata*, but uniformly tinged. They have a mouth at the anterior end, followed by a short œsophagus, leading to a stomach, and often a gizzard, from which a straight intestine extends directly to the anus, which is dorsally placed in the last segment; numerous cæca (or biliary ducts?) enter the stomach on each side. A tortuous pulsating dorsal vessel sends the blood from the tail to the head, where it enters a large ventral vessel, which returns the blood again to the dorsal one by numerous anastomosing branches at the posterior end. Over the great ventral vessel, and chain of ganglia, is another longitudinal vessel, the "supra-ganglionic," into which the blood