

its force-system attained thus a 1-horse capability when the engine had attained the size of a 100 horse-power, and poor construction with that. What would it be but a small thing vastly overgrown. In an animal there are the *sensorial* and *motorial* systems of force, which have their prime center in the cephalic nervous mass; and there is also the *vegetal*, or the power of growth or vegetative enlargement, which requires, as vegetation shows, no such nervous center, although in animals it is mostly under nervous control. If then this central control is weak, vegetative increase may make a vast structure, as unwieldy for the power within as the 100 horse-power engine with a 1-horse force-system; and it should in such a case manifest the feebleness of the force-system in an analogous manner, that is, by sluggish movements, or by stupid senses, and have corresponding structural deficiencies: as is true of a huge Medusa among Radiates, a Horse-shoe (Limulus) among Crustaceans; a Sloth and its kin among Mammals, etc., etc.

8. Mr. Walsh objects to the wide separation of the Hemipters (or Heteropters) and Homopters; and in this he is sustained by many facts and good authority. As respects this, and other like points in the classification, it is necessary to distinguish between direct inferences from the principle of cephalization, and conclusions from all the various considerations bearing on classification. By that principle, we prove that Hemipters are inferior to Homopters, since they are *metasthenic* in the wings, while the latter are *prosthentic*: but it does not also follow from it that the two groups should be so widely separated, for they may still be superior and inferior subdivisions of the same group. *Cephalization distinguishes grade among groups; but it is subordinate to type of structure in fixing the limits of natural groups.* Toward this latter object it affords aid through the many new criteria it brings to light, and through the evidence it supplies as to the relative value of such criteria; yet its distinctions are to be used in connection with all others that are available. And they have been thus used by the writer in his attempts to present the true system of arrangement among species.

I have been led to place the Homopters near the Lepidopters, and the Hemipters near the Coleopters, by the following considerations:—

a. The Homopters, as most authors assert, have close structural relations to the Lepidopters. The Hemipters are much less near the Lepidopters, and approximate, as some authors have admitted, to the Orthopters and Coleopters, especially the former. The fact that the anterior wings in Hemipters, as in the Coleopters and Orthopters, are not flying wings, is an important point