

podoconus, and the peculiar shape of its nucleus. He also published excellent figures of some interesting new species.

O. Bütschli, 1882, in his valuable paper entitled: "Beiträge zur Kenntniss der Radiolarien-Skelette, insbesondere der der Cyrtida" (Zeitschr. für wiss. Zool., vol. xxxvi. p. 485) made an attempt at a natural classification of the Cyrtida, which he derived from the *Spyroidea* or *Zygocyrtida*. As already mentioned above, we cannot accept this essay as the foundation of a true natural system, since the affinities of the *Cyrtellaria* (and of the *NASSELLARIA* as a whole) are far more complicated and difficult than Bütschli supposed. His views were supported by accurate observations only on the structure of the fossil *Cyrtoidea* of Barbados; these, however, represent the minority only of the genera, and many interesting and important forms (mainly of true "Monocyrtida") remained unknown to Bütschli. A great part, however, of his observations are very useful, and his remarks on comparative morphology are very suggestive.

The *Cyrtoidea* may be divided into families and subfamilies according to three different principles, viz., (1) the number of joints into which the shell is divided by transverse strictures; (2) the number of radial apophyses which arise from the shell; (3) the shape of the basal mouth, which is either open or closed by a lattice-plate. At present every attempt of classification in this large group must be more or less artificial, since the affinities of the numerous smaller and larger groups are extremely complicated, and the ontogeny, the only sure guide in this phylogenetical labyrinth, is perfectly unknown. It seems therefore the most convenient to employ for our artificial classification, first, the number of shell-joints, second, the radial structure, and third, the shape of the mouth.

A. The number of joints into which the shell is divided by transverse constrictions, serves here for the distinction of four primary groups or suborders of the *Cyrtoidea*, viz., (1) *Monocyrtida* with one joint; (2) *Dicyrtida* with two joints; (3) *Tricyrtida* with three joints; and (4) *Stichocyrtida* with four or more joints. In my *Prodromus* (1881, p. 426) I divided the latter group into *Tetracyrtida* (with four joints), and *Stichocyrtida* (with five or more joints); but these two groups may be united, since the fourth and all the succeeding joints are of rather indifferent shape and of little morphological value. The three first joints, however, are usually very different and possess a high morphological importance, so that we distinguish the first joint as cephalis, the second as thorax, and the third as abdomen. The uppermost transverse constriction, which separates the two first joints, cephalis and thorax, is the collar stricture and is usually caused by an internal fenestrated septum, the cortinar septum. The second constriction, which separates the second and third joints (thorax and abdomen) is called the lumbar constriction. The following constrictions (in the *Stichocyrtida*) are indifferent and of little morphological interest, and require therefore no peculiar designation.