

243. *Mesozoic Radiolaria*.—From the Mesozoic or Secondary period numerous well-preserved Radiolaria have recently been described. They belong for the most part to the Jurassic formation (see notes A, B, C), whilst the more recent Chalk (see note D) and the older Trias (see note E) have hitherto yielded but few species. All the main divisions of the Jura, both the upper (Malm) and the middle (Dogger), and especially the lower (Lias) appear in certain localities to be very rich in well-preserved shells of fossil Polycystina. Most of these are aggregated together in coprolites and quartzites (jasper, chert, flint, &c., § 248). The majority are *Cyrtoidea*, the minority *Sphæroidea* and *Discoidea* in almost equal proportions; a few *Beloidea* (*Sphærozoum*) and *Phæocystina* (*Dictyocha*) are also found among them. The general morphological character of these Jurassic Radiolaria is very different from that of the nearly related Tertiary and living forms. In general, their siliceous shells are firmer and more massive, usually also somewhat larger, but of simpler structure. The manifold delicate appendages (spines, bristles, feet, wings, &c.) which are so richly developed in the living SPUMELLARIA and NASSELLARIA, and are also well shown in the Tertiary species, are entirely wanting in the majority of the Jurassic Polycystina. The *Sphæroidea* and *Prunoides* are all simple spherical or ellipsoidal lattice-shells (*Monosphærida*); concentric lattice-shells (*Polysphærida*) are entirely wanting. The *Cyrtoidea* are, for the most part, devoid of radial processes or basal feet (*Eradiata*); triradiate and multiradiate forms, such as are found abundantly in the recent and Tertiary formations, are very rare. The large number of many-jointed forms (*Stichocyrtida*) and of *Cyrtoidea* with latticed basal opening is very striking.

A. The most important work on the Jurassic Radiolaria, regarding which but little was known prior to the year 1885, is the valuable and in some respects very interesting *Beiträge zur Kenntniss der fossilen Radiolarien aus Gesteinen des Jura*, by Dr. Rüst of Freiburg i. B. (1885, *Palæontographica*, Bd. xxxi. 51 pp. with 12 plates). Unfortunately this important work was issued only when about half of the present Report was printed off, so that it was no longer possible to include the 234 species there described in its systematic part. I have therefore elsewhere given a list of the Jurassic Radiolaria, and at present only make the following remarks:—Of the 234 species described, the larger half (130) belong to the NASSELLARIA (*Cyrtoidea*), the smaller half (102) to the SPUMELLARIA (38 *Sphæroidea*, 14 *Prunoides*, and 50 *Discoidea*). In addition, there are 2 PHÆODARIA depicted, and several spicules which are probably to be referred to the *Beloidea*. Among the 130 *Cyrtoidea* (of which 2 are described as *Botryodea*), there are 24 *Monocyrtida*, 14 *Dicyrtida*, 22 *Tricyrtida*, and 70 *Stichocyrtida*. Just as striking as the predominant number of the last is the fact that there are only very few triradiate (9) and multiradiate (4) species found among these 130 *Cyrtoidea*, as also the large number of species with latticed basal opening; *Stephoidea* appear to be entirely wanting. The rich material of jasper, chert, flint, and coprolites in which Dr. Rüst found these Radiolaria, is derived for the most part from the Jurassic rocks of Germany (Hanover, South Bavaria), Tyrol, and Switzerland (compare § 248).