

2. The *Blastoids* (*Pentremites*, etc.).—Having a symmetrical ovoidal body, with 5 petal-like ambulacra meeting at the summit, without proper arms, and attached by a stem like that of the *Encrinites*.

3. The *Cystoids* (from the Greek for a *bladder*), Fig. 444.—Arrangement of the plates not often regularly radiate. Arms, when present, proceeding from the center of the summit instead of the margin of a disk; in some, only 2 arms; in others, replaced by radiating ambulacral channels, which are sometimes fringed with pinnules.

In ancient Crinoids, the arms are not generally free down to the base, but there is a union of their lower part, either directly or by means of intermediate plates, into a cup-shaped *body* or *calyx* (as in Fig. 443, and also Figs. 995, 999, under the Subcarboniferous period, page 640).

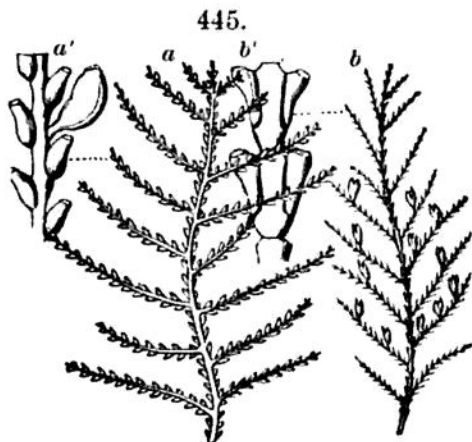
In Fig. 434, the plates of one of these cups, in the species *Batocrinus longirostris* H., are spread out, the bottom plates of the cup being at the center. The plates, it is seen, are in 5 radiating series, corresponding to the 5 rays or arms of the Crinoid, and between are intermediate pieces. The 3 plates numbered 1 are called the *basal*, as the stem is articulated to the piece composed of them; 3, 3, 3 are the *radial*; 4, 4, *supra-radial*; 5, *brachial*, situated at the base of the arms; 7 are immediate plates, called *inter-radial*; 8, another intermediate, the *inter-supraradial*. Sometimes, in other Crinoids, there is another series of plates, at the junction of the plates 1 and 3, called *sub-radial*. Finally, the anal opening of a Crinoid is situated toward one side of the disk, it being lateral, as in the Echinoid in Fig. 432; and the intermediate group plates numbered 10 are called the *anal*.

In the *Cystoids*, the aperture is generally lateral and remote from the top, as in Fig. 444, while the arms often come out from the very summit. The *Cystoids* are also peculiar in what are called *pectinated rhombs* (see Fig. 444); that is, rhombic areas crossed by fine bars and openings; the use of them is uncertain, — though they are probably connected with an aquiferous system and respiration.

6. Cœlenterates.

The Cœlenterates are distinguished from Echinoderms by the existence of only one opening to the digestive system, the mouth. Moreover, the tentacles and other parts are never normally a multiple of 5, but either of 4 or 6; of 4 in Hydrozoans and 4 or 6 in Polyps.

1. *Hydrozoans* (*Acalephs*, *Medusæ*, *Jelly-fishes*, *Hydroids*).—Having the body, in the adult stage, usually nearly transparent or translucent, looking jelly-like; and internally a stomach-cavity, with radiating branches. *Ex.*, the *Medusa*, or *Jelly-fish* (Fig. 438), which generally floats free, when in the adult stage, with the mouth downward. The *Hydra* and allied species are here included. Most marine Hydroids at times produce sexual buds, which, in many species, break away and become free jelly-fishes.



HYDROZOANS. Figs. *a*, *a'*, *Sertularia abietina*; *b*, *b'*, *S. rosacea*.

Many of the Hydroids *make corals*, and hence are common as fossils. Fig. 439 represents a *Hydra* enlarged, with a young one budded out from its side. Some species of the group — those of the *Sertularia* tribe — form delicate chitinous corals, such as are represented in Fig. 445, in which each notch on the little branchlets corresponds to the cup-shaped cell from which an animal protrudes its flower-shaped head. (*a* is the *Sertularia abietina*; *b*, *S. rosacea*; and *a'*, *b'*, portions of branches enlarged.) The interior cavities