

fact of the nutritive system having one or two open extremities, or by the perfection of the nervous or branchial systems, or by the condition of the general visceral cavity. Moreover some Echinoderms have *only one* opening to the alimentary cavity, while *some Acalephs have two*, like the highest Echinoderms, thus proving that such distinctions are of small importance alongside of system of structure. Again, the nervous system of Echinoderms, as already stated, is only the perfected state of the nervous system of some Polyps and Acalephs.

Echinoderms appear to differ strikingly from Polyps in having many tentacles from one tentacular compartment. But in Polyps, one compartment has occasionally, besides its one tentacle, a series of them; thus evincing the same fundamental idea in the structure of the two, and affording proof of their close relationship. The branchial rosette in a Holothurian looks quite peculiar; but Actiniæ that live, like most Holothurians, in the sand, have sometimes a similar branchial rosette, the crimped or finely divided appendages among the tentacles of such Actiniæ being true branchiæ, as Verrill has observed; and, further, such appendages have no compartment of their own, but grow out from one that bears its normal tentacle (page 19). The group of tentacles and branchial appendages in the Actinia constitute a rosette around the mouth wholly analogous to that of a Holothurian. This peculiarity is therefore confirmatory evidence that Polyps and Echinoderms are one in system of structure and alike Radiates.

III. PROTOZOANS.

Foraminifers, which include the Orbitolites (mentioned on page 121), the Globigerinæ (page 174), and also Sponges, are the secretions of Protozoans, just as ordinary corals are the secretions of Polyps.

Protozoans, the lowest and simplest of animals, show their simplicity in, *first*, their minuteness, the animals being mostly between a 100th and a 10,000th of an inch in length; *secondly*, in having no external organs or parts, excepting (1) a mouth, and (2) minute cilia or thread like processes; *thirdly*, in having no distinguishable digestive apparatus excepting a stomach; *fourthly*, in the fact that the stomach and mouth are sometimes wanting, or exist only when extemporized for the occasion. The species have, besides, a palpitating vesicle or vacuole within the body which appears to serve the purpose of a heart. Part of the so-called Infusoria are Protozoans.

In the lowest section of Protozoans—that of the *Rhizopods*—the animal has a spheroidal body, if of any particular shape, but is generally without a permanent mouth or stomach. It has the power of extending out portions of its protoplasmic body in the form of thread-like processes, and thence the name Rhizopod,