

seas, some attached, but generally free, and creeping on the surface of seaweeds, on the mud, the sands and rocks, or on dead shells and corals, or the lifeless fixed hard parts of other living animals, as the shells of mollusks, corals, sertularians, and sponges. Large numbers are pelagic, or live on the high seas, swimming in the superficial water, while their dead shells form an incessant rain, and contribute largely to the formation of the ocean mud.

Of their class, the Foraminifera have been longest and best known, and their tiny and beautiful shells have been the subjects of many descriptions and illustrations. The characters of the order have been especially elaborated in more recent works, among which may be mentioned the "Organization of the Polythalamia" by Dr. Max S. Schultze, and the "Introduction to the Study of the Foraminifera" by Dr. William B. Carpenter.

The Foraminifera, though generally too minute to be distinguished by the naked eye, are readily detected with a good pocket-lens. They are commonly largest in tropical seas, and even the same species are better developed in warmer than in colder latitudes. A few, the giants of their kind, are conspicuous for their size, and range even to the diameter of several inches. In former ages they frequently reached a greater growth, so that fossil forms are commonly larger than those now living. Some of the extinct species exceed in size double that of any known existing ones.

The Foraminifera are provided with a shell, mostly calcareous, but often partially calcareous with incorporated siliceous sand, or it is composed of sand-grains alone cemented together. With few exceptions, the shells are partitioned into many chambers, and the most common forms, which are spiral, so nearly resemble the shells of the Nautilus and Ammonite, that until a comparatively late period all were classed together as Polythalamia (Gr. *polus*, many; *thamos*, chamber) or Cephalopoda (the Cuttle-fishes). D'Orbigny, recognizing in the shells of the Nautilus and Ammonite that the chambers were traversed by a tube, while in the shells of the so-called microscopic Cephalopods the chambers communicated by one or more holes, called the former Siphonifera (*siphon*, a tube; *fero*, I carry) and the latter Foraminifera. In a systematic arrangement of the Cephalopods in 1825, D'Orbigny still retained the Foraminifera as an order. Dr. Carpenter remarks that "no suspicion appears at that time to have crossed the mind