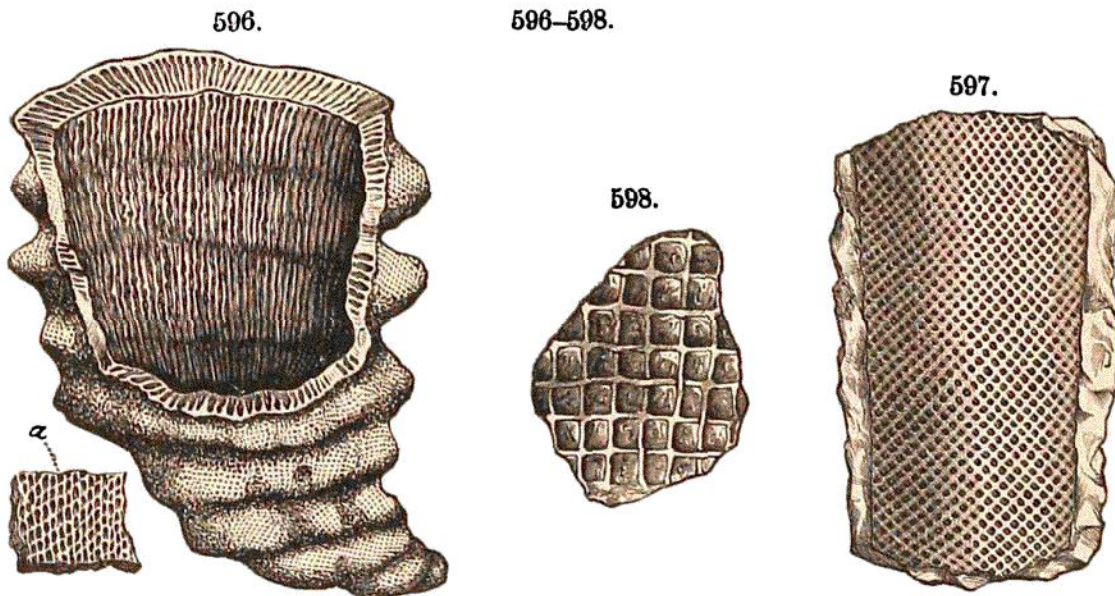


no doubt that the seas were everywhere well populated. Among the occurring fossils in the shales, Graptolites (Figs. 604–609) are often very numerous. The American rocks have afforded a number of Sponges, a few Crinoids and Corals, some Bryozoans, many Brachiopods, few Lamellibranchs, some Pteropods and Gastropods, and a number of Orthocerata and Trilobites.

PLANTS. — But little is known of the Seaweeds, as only casts of rounded stems, sometimes simple, often more or less entangled, and consisting of the material of the rock, have been found — and the vegetable nature of these forms is doubted. The coal nodules (page 493) are supposed to have been once in the state of mineral oil, and may have been derived from the decomposition of organic matter of any kind. The hot moisture which consolidated the rock and made the siliceous solution for the associated quartz crystals (in which the coal is sometimes enveloped) probably drove the oil from the beds and led to its collection in the cavities or geodes.

ANIMALS. — Some of the Sponges were of large size. Fig. 596 represents a specimen (the lower part restored) of a species of *Archæoscyphia* described by Billings, which attained a length of two or three feet and a diameter of four inches. These Sponges are Hexactinellid in type; that is, have six-rayed siliceous spicules (the rays at right angles with one another). These



SPONGIOZOANS. — Figs. 596, *a*, *Archæoscyphia Minganensis*; 597, *Receptaculites elegantulus*, drawn from a gutta-percha cast; 598, *R. Calciferus*, fragment showing inner surface. Billings.

species are from the Mingan Islands. Other Hexactinellid Sponges, from Little Metis, Canada, of the genus *Protospongia* of Salter, are represented in Figs. 599 to 603, natural size. Another species of sac-like form — and rhombic meshes half an inch wide, *Palæosaccus Dawsoni* of Hinde — had a diameter of 14 inches. They are from the base of the Levis beds, Quebec group, and, according to Dawson, are not newer than the Calciferous. The *Receptaculites* (Figs. 597, 598) are supposed to be Sponges.