

the paleontologist or fossil hunter can sometimes obtain the entire fossil cast by breaking open the rock, and prying the cast loose from its impression. The fossil obtained will have the same form and shape as the original animal, but will be composed of hardened sediments which had washed into the cavity. Thus a natural cast is formed in nature, much as a plaster of Paris cast of a jaw bone or skull is made for museum displays.

4. Fecal pellets. Lumps of waste material eliminated from the intestines of various kinds of marine animals, such as crabs and their relatives, often become fossilized. These mineralized pellets are frequently of great aid in determining the kinds of life which were present in or on the sediments in ancient times.

5. Burrows and tubes. The burrows left in the sea shore sands by marine worms often become filled in with other sediments which then harden, leaving an identifiable record of the path of the worm. (The mucus or other slimy material left in the burrow by the worm is sufficient as a separating material, so that there will be a contrast between the wall of the burrow and the sediment which fills the cavity.) Also, some types of marine worms secrete hard calcareous tubes which look like small, kinky pipes, in which they live for protection. These tubes are later transformed into permanent fossil tubes when the conditions on the sea shore are right. In some limestone the worm burrows and tubes furnish us with an extensive and accurate record of the worm population in the marine environment where the limestone was formed. The present author has seen spectacular arrays of such fossil burrows in the limerocks near to the shore in the Bermuda Islands.

In summary, we can say that there are several ways in which the original remains of animals can become preserved or fossilized, and that such fossils are very abundant in most of the sediments of the earth. As one looks over the above list of kinds of fossilization, he will be able to note that burial is necessary for the formation of most fossils. However, since most of the animals and plants which are fossilized have hard, durable skeletons, the burial does not have to be a rapid process. The shell or other skeletal part may lie on the edge of the reef or sea shore for a considerable time, and then be buried by water currents or waves which cover them with sediments.

The U. S. Geological Survey has published many volumes describing and picturing fossils in marine sediments. The series of papers which describes the Bikini and Eniwetok atolls includes the main types of fossils found in the sedimentary layers of those reefs. Some of these are corals, calcareous algae, sea urchins and their relatives (echinoids), and the small shell-producing protozoa belonging to the Order Foraminifera. Figures 7 to 10 show photographs of some of these fossils which were removed from the test wells on the islands. The caption beneath each figure gives the depth from which the fossils were taken, as well as their identification.