

c11 Fossilization

< Permineralization, recrystallization, replacement, distillation, casts, molds >

“Who’s buried in Grant’s Tomb?”

—tired joke made popular by Groucho Marx on his quiz show *You Bet Your Life*.¹

... he sampled a layer of golden-brown sludge from the bottom of a frozen Pleistocene pond. ... as the ice containing the [fossil] microbes thawed under a microscope, [Richard] Hoover saw the rod-shaped cells start swimming around—picking up where they’d left off 32,000 years ago.²

Fossilization, which is the preservation of evidence that indicates *prehistoric* life, can be whole organism mummification by drying, freezing, freeze-drying, peat-bog tannin pickling, tar-pit ester pickling (**Footnote c11.1**), or in a variety of ways for hard parts (**Figure c11.1**), or as traces for soft parts.

Taphonomy is the study of the sequence life-death-preservation-survival-discovery. The initial stages of how fossils actually form has become (for the strong of stomach) an experimental science.³

In the United States, fossils on private property belong to the landowner. On federal land, invertebrate fossil collecting is allowed in some places, but vertebrate fossils, which are rarer, cannot be removed except by researchers who have obtained a legal permit to do so. Most states bar commercial collecting of vertebrate fossils from state land.⁴ □

Footnote c11.1 Kitchen pickling is by immersion in a water brine of common salt, 0.8-1.5 percent of the weight of vegetables or meat. Carbohydrates and proteins begin to rot and, out of contact with oxygen, their sugars are bacterially metabolized to produce lactic acid that accumulates to preserve (the salt merely slows putrefaction so that yeasts do not form before). Optimum lactic fermentation takes place between 64 and 71 degrees Fahrenheit.⁵

Figure c11.1⁶

