

THE MEANING OF FOSSILS, 1992

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Martin Rudwick's 1972 book "The Meaning of Fossils" was structured around five events in the history of paleontology, set in 1565, 1666, 1796, 1829, and 1857. Each event was tied to developments in paleontology, geology and biology in the surrounding decades. The central conceptual issues in those five episodes—the origin of fossils, geochronology, extinction, gradualism or catastrophism, and the origin of species—are all still with us. Rudwick's history ended with the 1870s, and the gap between then and now is almost as great as that between his two most widely separated episodes. My own experience in paleontology spans one-third of that gap; I shall talk about the meaning of fossils today, in the context of recent developments in paleontology (mostly of vertebrates) and biology, and how those affect our understanding of fossils. My main headings are: techniques and methods (of preparation and interpretation of fossils), the completeness of the fossil record (how we assess that, and how our assessment is changed by new finds and by new interpretations), the rise of molecular biology and its impact on paleontology, and some aspects of the relation between evolutionary theory and paleontology.