

iads of years ago might have served the animal to conceal itself from its enemies, still yields the color with which its image may be drawn.* In other strata, again, nothing remains but the faint impression of a muscle shell; but even this, if it belong to a main division of mollusca,† may serve to show the traveler, in some distant land, the nature of the rock in which it is found, and the organic remains with which it is associated. Its discovery gives the history of the country in which it occurs.

The analytic study of primitive animal and vegetable life has taken a double direction: the one is purely morphological, and embraces, especially, the natural history and physiology of organisms, filling up the chasms in the series of still living species by the fossil structures of the primitive world. The second is more specially geognostic, considering fossil remains in their relations to the superposition and relative age of the sedimentary formations. The former has long predominated over the latter, and an imperfect and superficial comparison of fossil remains with existing species has led to errors, which may still be traced in the extraordinary names applied to certain natural bodies. It was sought to identify all fossil species with those still extant in the same manner as, in the sixteenth century, men were led by false analogies to compare the animals of the New Continent with those of the Old. Peter Camper, Sömmering, and Blumenbach had the merit of being the first, by the scientific application of a more ac-

* A discovery made by Miss Mary Anning, who was likewise the discoverer of the coprolites of fish. These coprolites, and the excrements of the Ichthyosauri, have been found in such abundance in England (as, for instance, near Lyme Regis), that, according to Buckland's expression, they lie like potatoes scattered in the ground. See Buckland, *Geology considered with reference to Natural Theology*, vol. i., p. 188-202 and 305. With respect to the hope expressed by Hooke "to raise a chronology" from the mere study of broken and fossilized shells "and to state the interval of time wherein such or such catastrophes and mutations have happened," see his *Posthumous Works, Lecture*, Feb. 29, 1688.

[Still more wonderful is the preservation of the substance of the animal of certain Cephalopodes in the Oxford clay. In some specimens recently obtained, and described by Professor Owen, not only the ink bag, but the muscular mantle, the head, and its crown of arms, are all preserved in connection with the belemnite shell, while one specimen exhibits the large eyes and the funnel of the animal, and the remains of two fins, in addition to the shell and the ink bag. See Ansted's *Ancient World*, p. 147.]—*Tr.*

† Leop. von Buch, in the *Abhandlungen der Akad. der Wiss. zu Berlin in dem Jahr 1837*, s. 64.