

natural forces, together with the phenomena which they produce.

But if we would correctly comprehend nature, we must not entirely or absolutely separate the consideration of the present state of things from that of the successive phases through which they have passed. We can not form a just conception of their nature without looking back on the mode of their formation. It is not organic matter alone that is continually undergoing change, and being dissolved to form new combinations. The globe itself reveals at every phase of its existence the mystery of its former conditions.

We can not survey the crust of our planet without recognizing the traces of the prior existence and destruction of an organic world. The sedimentary rocks present a succession of organic forms, associated in groups, which have successively displaced and succeeded each other. The different superimposed strata thus display to us the faunas and floras of different epochs. In this sense the description of nature is intimately connected with its history; and the geologist, who is guided by the connection existing among the facts observed, can not form a conception of the present without pursuing, through countless ages, the history of the past. In tracing the physical delineation of the globe, we behold the present and the past reciprocally incorporated, as it were, with one another; for the domain of nature is like that of languages, in which etymological research reveals a successive development, by showing us the primary condition of an idiom reflected in the forms of speech in use at the present day. The study of the material world renders this reflection of the past peculiarly manifest, by displaying in the process of formation rocks of eruption and sedimentary strata similar to those of former ages. If I may be allowed to borrow a striking illustration from the geological relations by which the physiognomy of a country is determined, I would say that domes of trachyte, cones of basalt, lava streams (*coulées*) of amygdaloid with elongated and parallel pores, and white deposits of pumice, intermixed with black scoriæ, animate the scenery by the associations of the past which they awaken, acting upon the imagination of the enlightened observer like traditional records of an earlier world. Their form is their history.

The sense in which the Greeks and Romans originally employed the word *history* proves that they too were intimately convinced that, to form a complete idea of the present state of the universe, it was necessary to consider it in its successive