

and, what is still more rare, a familiarity with geological reasoning, in order to feel the full force of the arguments that prove the high antiquity of the globe. Yet I know that I have a right to presume upon a high degree of scientific knowledge, and an accurate acquaintance with geology, among those whom I address.

In the first place, I must recur to a principle already briefly stated in a former lecture, namely, that a careful examination of the rocks presents irresistible evidence, that, in their present condition, they are all the result of second causes; in other words, they are not now in the condition in which they were originally created. Some of them have been melted and re-consolidated, and crowded in between others, or spread over them. Others have been worn down into mud, sand, and gravel, by water and other agents, and again cemented together, after having enveloped multitudes of animals and plants, which are now imbedded as organic remains. In short, all known rocks appear to have been brought into their present state by chemical or mechanical agencies. It is indeed easy to say that these appearances are deceptive, and that these rocks may, with perfect ease, have been created just as we now find them. But it is not easy to retain this opinion, after having carefully examined them. For the evidence that they are of secondary origin is nearly as strong, and of the same kind too, as it is that the remains of edifices lately discovered in Central America are the work of man, and were not created in their present condition.

In the second place, processes are going on by which rocks are formed on a small scale, of the same character as those which constitute the great mass of the earth. Hence it is fair to infer, that all the rocks were formed in a similar manner. Beds of gravel, for instance, are sometimes cemented together by heat, or iron, or lime, so as to resemble exactly the conglomerates found in mountain masses among the ancient rocks. Clay is sometimes converted into slate by heat, as is soft marl into limestone, by the same cause. In fact, we find causes now in operation that produce all the varieties of known rocks, except some of the oldest, which seem to need only a greater intensity in some of the causes now at work to produce them. By ascertaining the rate at which rocks are now forming, therefore, we can form some opinion as to the time requisite to