

naturalists, make it their chief objection to these theories, that they arbitrarily claim too great a length of time: yet the ground of objection is scarcely intelligible. For it is absolutely impossible to see what can, in any way, limit us in assuming long periods of time. We have long known, even from the structure of the stratified crust of the earth alone, that its origin and the formation of neptunic rocks from water must have taken, at least, several millions of years. From a strictly philosophical point of view, it makes no difference whether we hypothetically assume for this process ten millions or ten thousand billions of years. Before us and behind us lies eternity. If the assumption of such enormous periods is opposed to the feelings of many, I regard this simply as the consequence of false notions which are impressed upon us from our earliest youth concerning the short history of the earth, which is said to embrace only a few thousands of years. Albert Lange, in his admirable "History of Materialism,"¹² has convincingly shown that from a strictly philosophical point of view it is far less objectionable in a scientific hypothesis to assume periods which are too long than periods which are too short. Every process of development is the more intelligible the longer it is assumed to last. A short and limited period is the most improbable.

I have no space here to enter minutely into Lyell's great work, and will therefore mention only its most important result, which is, that he completely refuted Cuvier's history of creation with its mythical revolutions, and established in its place the constant and slow transformation of the earth's crust by the continued action of forces, which are still working on the earth's surface, viz. the movement of water and