metals, it will follow that those formed farthest from the surface will usually require the longest time before they can be exposed superficially. In order to bring them into view, or within reach of the miner, a greater amount of upheaval and denudation must take place in proportion as they have lain deeper when first mowed. A considerable series of geological revolutions must intervene before any part of the fissure, which has been for ages in the proximity of the plutonic rocks, so as to receive the gases discharged from it when it was cooling, can emerge into the atmosphere. But I need not enlarge on this subject, as the reader will remember what was said in the 30th, 34th, and 37th chapters, on the chronology of the volcanic and hypogene formations.

Concluding Remarks. — The theory of the origin of the hypogene rocks, at a variety of successive periods, as expounded in two of the chapters just cited, and still more the doctrine that such rocks may be now in the daily course of formation, has made and still makes its way, but slowly, into favor. The disinclination to embrace it has arisen partly from an inherent obscurity in the very nature of the evidence of plutonic action when developed on a great scale, at particular periods It has also sprung, in some degree, from extrinsic considerations; many geologists having been unwilling to believe the doctrine of the transmutation of fossiliferous into crystalline rocks, because they were desirous of finding proofs of a beginning, and of tracing back the history of our terraqueous system to times anterior to the creation of organic beings. But if these expectations have been disappointed, if we have found it impossible to assign a limit to that time throughout which it has pleased an Omnipotent and Eternal Being to manifest his creative power, we have at least succeeded beyond all hope in carrying back our researches to times antecedent to the existence of man. We can prove that man had a beginning, and that, all the species now contemporary with man, and many others which preceded, had also a beginning, and that, consequently, the present state of the organic world has not gone on from all eternity, as some philosophers have maintained.

It can be shown that the earth's surface has been remodelled again and again; mountain chains have been raised or sunk; valleys formed, filled up, and then re-excavated; sea and land have changed places; yet throughout all these revolutions, and the consequent alterations of local and general climate, animal and vegetable life has been sustained. This has been accomplished without violation of the laws now governing the organic creation, by which limits are assigned to the variability of species. The succession of living beings appears to have been continued not by the transmutation of species, but by the introduction into the earth from time to time of new plants and animals, and each assemblage of new species must have been admirably fitted for the new states of the globe as they arose, or they would not have increased and multiplied and endured for indefinite periods.*