

by all that has since come to light, and Geology now has, as regards North America, a record of the chief consecutive events in a continuous process of development. It has become manifest also that the development has gone forward not simply by enlargement about a nucleus, but through successive stages of work in Interior seas, having, in general, Archæan confines; and that the great Interior Continental sea was not due to a return to oceanic conditions, but a phase in this endogenous feature in the method of progress. Europe also had its interior seas, and Asia, — the two almost one; and so also had Australia, for the later facts show that in Cretaceous, or Cretaceous and Tertiary time, the Australian continent was divided in two by such interior waters. An exception to the general principle has been made by putting a hypothetical continent in the Indian Ocean. But the facts suggesting the hypothesis have been shown to be explained otherwise.

A detailed review, in this place, of the steps in the process of development is not necessary. The closing pages of the Dynamical Geology, 391 to 396, are an appropriate continuation of these remarks on the earth's development. With regard to the hypothesis on page 396, respecting the alternate or zigzag arrangement of the continents, geological history affords no satisfactory testimony. There is only the interesting fact that the ore belt along the Andes of South America is continued through the nearly east and west bend of Central America to the Rocky Mountains and extends on northward to Wyoming, with remarkable similarity in its ores and the age of the veins. Whether the supposed continental displacement gave this displacement to the deep-seated ore region that in the earth's later eruptive periods supplied the ore; or whether the similar position of the ore veins was due simply to a like position of the two continents with reference to the Pacific oceanic basin, it is not safe to say.

Details with regard to continental development have been given in the chapters on Geographical and Geological progress, closing the accounts of the Lower Silurian (page 524), the Paleozoic (page 714), the Mesozoic (page 867), and the Tertiary (page 932).

PROGRESS IN THE EARTH'S LIFE.

General principles with regard to the progress in the earth's life. — The Animal and Vegetable Kingdoms studied by science comprised, not very long since, only living species. Through the revelations of geology they now include, in addition, the life of an indefinite succession of faunas through the past ages up to, if not over, the borders of Archæan time. As a consequence of these developments, the following principles were early announced with respect to the progress in the earth's life: —

I. Progress from aquatic life to terrestrial life, commencing in the waters in an era of nearly universal waters, and reaching its higher stages over the land.