I. ARCHÆAN TIME.

SYNONYMY. — Primitivgebirge, Urgebirge, Lehmann, 1756, Werner. Urformation. Urgneissformation. Azoic Rocks, Murchison and De Verneuil, 1845, *Russia in the Urals*, i. 10. Fundamental Gneiss, Lewisian Gneiss, and later, Laurentian Gneiss, after Logan, Murchison. Mona Series, De La Beche, *Geol. Obs.*, p. xxxii, 1851, for crystalline rocks of Anglesea, etc. Azoique, D'Orbigny, *Pal. et Géol.*, 1851. Azoic System, J. D. Whitney, *Rep. of Foster and Whitney, Geol. Lake Superior Land District*, Part ii., pp. 8–35, 1851, the system comprising rocks north of Lake Superior, others south of the lake, also others in the Adirondacks, etc. Laurentian and Huronian, Logan, 1852, 1854. Azoic (following Whitney, with Logan's subdivisions), first edition of this Geology, 1863. Archæan, D., *Amer. Jour. Sc.*, viii. 213, 1874, and second edition Geology, 1875. Eozoic, J. W. Dawson, 1875. Crystallophyllian, Belg. Geologists of the Internat. Congr. Geol., 1885.

Archæan time commences geologically with the earth as a solid globe, or one having at least a solid exterior; for only the conditions of such a globe are within reach of geological investigation. By following the lead of ascertained law in physics and chemistry, and the suggestions of astronomy, and also such analogies as are afforded by later geological history, some probable conclusions may be drawn with reference to earlier time. But this is not the place for their discussion, except so far as to state the principal steps of progress. The following is a general view of the natural subdivisions of Archæan time.

I. The **Astral** æon, as it has been called, or that of the fluid globe having a heavy vaporous envelope containing the future water of the globe or its dissociated elements, and other heavy vapors or gases.

II. The **Azoic** æon. Without life.

1. The LITHIC ERA: commencing with the earth a solid globe, or at least solid at the surface; the temperature at the beginning above 2500° F.; the atmosphere still containing all the water of the globe (amounting to 200 atmospheres, according to Mallet, 1880), all the carbonic acid now in limestone and that corresponding to the carbon now in carbonaceous substances and organic substances (probably 50 atmospheres), all the oxygen since shut up in the rocks by oxidation, as well as that of the atmosphere and of organic tissues. The time when lateral pressure for crustal disturbance and orographic work was begun; when "statical metamorphism" or that dependent on heat of a statical source, — the earth's mass and the vapors about it, — began.
2. The OCEANIC ERA: commencing with the waters condensed into an ocean over the earth, or in an oceanic depression, with finally some emerging lands, — the temperature perhaps about 500° F., if the atmospheric pressure was still 50 atmospheres. The first of tides and the beginning of the retardation of the earth's rotation. Oceanic waves and currents and embryo rivers begin work about