

The Neptunist idea that the solid materials of the earth had originally been held in solution by a primæval ocean, no longer harmonised with the advance of chemical knowledge. Hence the Neo-Neptunist leader depicted the primitive earth as amorphous in constitution, silicic and carbonic acid having united all the component particles in a pasty mass. The formation of rock-material began with the separation of the silicates. Light and heat developed as crystallisation proceeded. The earth became self-luminous, and "certain effects were produced which have a resemblance to volcanoes." Different kinds of rock separated from the primitive amorphous substance, such as granite, syenite, porphyry, gneiss, crystalline schists, greenstone, slates; and afterwards sandstone, quartziferous sand, clay, and flint. A calcareous series formed contemporaneously with the siliceous rock-series, the calcareous rocks then becoming more strongly developed in proportion as the siliceous rocks were less developed. A carboniferous series of rocks began with the formation of graphite and anthracite, reached its maximum in the Carboniferous period, and closed in the youngest mountain-ranges with brown-coal and turf.

Although the theory of Fuchs was so fantastic that it was practically ignored by geologists, it had at least the merit of calling attention to a possible origin of granite, gneiss, schists, etc., in some other way than from a *molten* magma. Schafhäütl was one of the few geologists who accepted the theory of the aqueous origin of crystalline rocks, as he had himself succeeded in producing quartz crystals artificially under the action of superheated water.

Amongst the writers who supported the nebular theory, the French physicist Ampère was one of the most distinguished. In 1833 he published his "Théorie de la Terre" in the *Revue des Deux Mondes*. Ampère held the view that during the gradual cooling of the earth, the substances arranged themselves in the succession of their melting-points. Irregularities in the arrangement of the materials were explained by Ampère as a result of chemical processes which caused a rise of temperature, renewed melting and eruption of masses that had already solidified. Ampère further supposed similar chemical processes to be still in progress in the interior of the earth, and to be the chief cause of mountain-making, volcanoes, and earthquakes.