theory of their origin from two different subterranean localities, but upon the assumption of their origin at different depths of the crust. He held as a general principle that subterranean magmas are distributed in the crust according to their specific weight, the lighter magmas rich in silica occupying the crust-cavities in the higher zones, the heavier basic magmas occurring at lower horizons. Durocher, in 1857, gave a similar explanation of the chemical and mineralogical differences in rock-magmas.

On the other hand, Poulett-Scrope (1825), Darwin (1844), and Dana (1849) attributed the varieties of eruptive rocks to the subsequent division and differentiation of a homogeneous primitive magma. Justus Roth (1869) also regarded all plutonic rocks as having been derived from a uniform primitive magma, and explained their present differences of constitution as a result of the different rates of cooling. Iddings more recently remarked on the fundamental mineralogical affinity of the different rock varieties in an eruptive district, and compared such resemblances with the blood relationships of organisms. Although most geologists at the present day incline to the opinion that the different facies of eruptive rock represent portions of a single primitive magma, there is still great variance of opinion regarding the mode of division and differentiation.

The experiments of Spallanzani, Hall, and Bischof showed that by means of regulating the process of cooling, or by the application of different degrees of pressure, fused silicate mixtures could be obtained in glassy, slaggy, or crystalline rock-form. By Daubrée's experiments it was ascertained that the conditions requisite for the artificial reproduction of granite-grained eruptive rocks were a moderate temperature and the presence of water vapour. Again, the experiments of Fouqué and Lévy seemed to show that the younger eruptive flows with porphyritic structure had solidified slowly from an igneous magma. It has proved a very complex and difficult question to find out what determines the particular sequence in which the rock-forming minerals separate from a viscous magma. Fournet and Bunsen showed that the minerals by no means separated from the magma in the order of their fusing-points. After various attempts to solve the problem by direct methods, it was then approached indirectly: keeping in view the essential constituents of any particular rock, attempts