a platinum crucible and fused; the fused mass was then subjected for forty-eight hours to a temperature nearly that of the fusing-point, the material being afterwards allowed to cool slowly. According to the ingredients that were introduced, consolidated rock-material agreed completely with certain augite-andesites, leucite and nepheline rocks, and contained the majority of the minerals composing these rocks in the form of well-developed crystals.

Inasmuch as these important results showed that the porphyritic series of rocks could originate merely by the cooling of a molten magma, they tended to widen the gulf between the porphyritic and basaltic, and the granite-grained series. Favour was given to Hutton's assumption that the latter owed their distinctive characters to their subterraneous origin under great pressure, and the Huttonian conception was made even more emphatic by Rosenbusch in his classification of 1886. Further confirmation was given by Gilbert's description of intrusive masses of rock, so-called "laccolites" (*ante*, p. 274) between sedimentary strata in the Henry mountains; and also by Reyer's investigations on massive flows and local differences in the mineralogical composition and the texture of the consolidated rock.

After the principle of the eruptive origin of the crystalline massive rocks had been firmly established, the interest of petrographers was directed to the investigation of the chemical constitution of the rock-magmas and the processes effecting their consolidation. The chemistry of rocks had been greatly advanced by the researches of Abich, Delesse, Bischof, and especially by Bunsen. As has been already mentioned (*ante*, p. 328), Bunsen concluded from his examination of the igneous rocks of Iceland that all the eruptive rocks of that island in their composition presented either a normal trachyte magma or a normal pyroxene magma, or a mixture of these two varieties of rock-magma in varying proportions. According to Bunsen, it is possible by means of a simple formula, being given the amount of silica present in such a mixed rock, to reckon the amount of the normal trachytic and normal pyroxenic material present in the rock. Streng, Kjerulf, and others accepted Bunsen's conclusions and tried to apply them generally to all eruptive rocks.

Sartorius von Waltershausen explained (1853) the chemical difference of the Iceland eruptive rocks, not upon Bunsen's