ditions are obtained for the production of molecular arrangements and the formation of those crystalline bodies which can solidify in the midst of a viscous magma. The limits of temperature for the production of a given mineral must thus be comprised within the narrow range between the fusion-point of the mineral and that of its glass. By varying the temperature in the experiments, distinct minerals can be obtained from the same magma. Minerals such as olivine, leucite, and felspar, which solidify at higher temperatures than the others, appear first, and the later forms are molded round them. Thus an artificial basalt, like a natural one, always shows that its olivine has crystallized first. By providing facilities for the crystallization of the minerals in the inverse order of their fusibilities, the characters of naturally formed crystalline rocks can thus be artificially produced by simple igneous fusion.

Certain well-known facts which appear to militate against the principle of these experiments have been successfully explained by MM. Fouqué and Michel-Lévy. Some minerals, very difficult to fuse, contain crystals of others which are easily fusible, as if the latter had crystallized first, as in the case of pyroxene inclosed within leucite. But in reality the pyroxene has slowly crystallized out of inclusions of the surrounding glass which were caught up in the leucite. Where the same silicates are found to have crystallized first in large and subsequently in smaller forms, they may reveal stages in the gradual cooling and consolidation of the mass, one set of crystals, for example, being formed in a lava while still within the vent of a volcano, and another during the more rapid cooling after expulsion from the vent.

The rocks obtained artificially by these observers are