exhibit rounded and confluent outlines; whilst those produced by crystallization, are made up of plane surfaces, meeting, in sharp edges, under definite (and for the same substance, under constant) angles.* Although crystals usually originate when matter passes slowly from the gaseous or liquid condition into the solid state, crystallization and solidification are not actually identical. Various substances, for example, such as silica in certain conditions—its hydrate (constituting the different opals)—gums,—certain resins, &c.,—appear to resist altogether the action of crystallization. Mr. Graham (the present Master of the British Mint) has suggested that these bodies may retain, or retain to a greater extent than crystalline bodies, the latent heat which they possessed before solidification.

The crystal forms and combinations met with in Nature, exclusive of those produced by the chemist in his laboratory, are exceedingly numerous, many thousands being known to exist. By the help of certain laws, however, and, more especially, by the aid of one, termed "the Law of Symmetry," we are enabled to resolve these multitudinous *combinations into six groups or systems. The forms of the same* group combine together, and may be deduced mathematically from each other; whilst those of distinct groups are unrelated. Thus, although the cube, the rhombic dodecahedron, and the regular octahedron, appear at first sight to be unconnected forms, yet by the Law of Symmetry their co-relations may be readily shown. This law, for instance, exacts one of three things, of which the most important is to this effect, *viz.*, that if an edge or angle of a crystal be modified in any way, all the similar edges or angles in the crystal must be modified in a similar manner. Now the cube has twelve similar edges and eight similar angles. Consequently, if one edge or one angle be truncated, or, to use a term more in conformity with the actual operations of Nature, if one of these be *suppressed* during the formation of the crystal, all the other edges (or angles) must be suppressed equally; and if the new planes which thus arise be extended until they meet, the rhombic dodecahedron on the one hand, and the

* This law is affected within slight limits by isomorphous replacements, and also by changes of temperature. The law itself appears to have been discovered by Nicolaus Steno (then a naturalized Florentine) as early as 1669, but its true importance was not appreciated until the re-announcement, or rather re-discovery of the law in 1772 by the French crystallographer, Romé de l'Isle. Many of the contemporaries of the latter—amongst others, the celebrated Buffon—attempted to deny its existence, but being susceptible of practical proof, its truth was soon established.