nomenon has been called isomorphism. The discovery has been of great practical value, as well as theoretical interest. If the definite and invariable form of existence which the crystal exhibits is considered as a proof of the purity of a chemical substance, and if in the same crystal one elementary substance can be replaced by one or several other substances, then this substitution must take place in definite proportions of weight, in the equivalent proportions. Thus the production of such isomorphous crystals affords a method of determining the relative atomic weights or equivalents. As such it was hailed by Berzelius; the more so, as in no case did the equivalents thus obtained contradict the numbers he had found by other methods.[1] Theoretically, the property of isomorphism acquired a still greater interest when Mitscher-

[1] In the early days of the atomic theory as developed by Berzelius, great uncertainty existed as to the numbers which were to be chosen for the atomic weights of the elements. This was owing to the property of fixed multiple ratios—it remaining undecided which was the smallest submultiple of a given combining ratio in which any special element could enter into combination. Other methods were then used to assist in deciding this point. The law of volumes, and later the properties of isomorphism, were therefore hailed by Berzelius as welcome aids in fixing the atomic numbers. Both these methods are still used, though the latter is not always decisive. The most important method according to the present state of our knowledge is the determination of the vapour density, where such can be got, and that of the specific heat in the solid state. It is mainly owing to Cannizzaro (1858) that the apparent contradictions, which were supposed to exist in the numbers arrived at by various methods, were explained by reverting to Avogadro's forgotten hypothesis. The periodic law or arrangement of the elements into classes showing similar physical properties is likewise of use. A complete, lucid, and exhaustive statement of the most recent position of our knowledge of the true atomic weights of the elements will be found in Lothar Meyer's posthumous tract, 'Die Atome und ihre Eigenschaften,' Breslau, 1896. In this valuable book, as also in Ostwald's 'Allgemeine Chemie,' vol. i., will also be found an account of the degree of accuracy which attaches to our present knowledge of the atomic and combining numbers, which form the solid foundation of all quantitative chemistry and all practical applications.