

the chemist was enormous, offering a large, almost limitless, field of research and speculation. Let us see under what leading ideas this knowledge has been arranged.

In the gradual development and clearer definition of these conceptions a general rule of thought seems to have unconsciously guided philosophers probably more than in any other department of knowledge. It is the rule of simplicity.<sup>1</sup> How the human mind should have arrived at the old formula of "simplex sigillum veri" is difficult to understand on any other ground than that of convenience and expediency. The prevailing impression, indeed, which the world of phenomena makes on the mind of an unbiassed observer must be the very reverse of simplicity or unity of law and purpose. That, nevertheless, the knowledge of some simple relations in time, number, and space would enable the human intellect to acquire a considerable insight into the course of events and the order of Nature's processes must have come to philosophers

14.  
"Simplex  
sigillum  
veri."

<sup>1</sup> The progress of chemical theory is the history of the attempt to find simple relations of number and form, representing the countless combinations of elementary substances; and of the growing conviction that nearly every simplification must, in course of time, be abandoned. No formula remains unchallenged except the doctrine of fixed and fixed multiple proportions, and that only if we confine ourselves to solid compounds; but the proportions themselves are not accurately known, though no phenomenon exists which disproves the assumption that they are invariable. The original conception of the atom as a round hard body had to be abandoned for the more complicated

notion of a molecule, an assemblage of atoms; the conception of elementary bodies had to be amplified by that of compound elements or radicles; the idea that the atomic weights were multiples of a lowest number had to be abandoned; the binary theory of the combination of bodies was replaced by the theory of radicles, of nuclei, of types; the simple nature of the elementary particles had to give way to a complicated atomicity, from which there had to be again distinguished the valency or capacity of saturation of the elementary constituents. It is a progress from simpler to more and more complex methods of representation.