

Prout's simple but incorrect assumption belongs to the age which witnessed the decomposition of many compounds into their two constituents by Davy's successful use of the galvanic battery, at the poles of which the two elements of substances made their separate appearance. Substances which had always been considered as elemental and permanent, such as many oxides and earths, came to be ranged among the list of binary compounds. This lent plausibility to the idea that even the supposed elements themselves might ultimately prove to be aggregates—differing in number and figure—of the elementary particles of one and the same primary substance. Though with Prout's hypothesis this view has been repeatedly held and refuted, another theory—recommended likewise by its simplicity—had its origin in the discoveries of Davy, and the further development of them by Berzelius. This is the so-called electro-chemical or binary theory of chemical compounds. The dual combination of one elementary substance with another, and again of two dual compounds with each other, and so on, even to the most complicated compounds, was to be the simple type of chemical combination. This view, so

atomic weight of carbon, taking oxygen as 16, was incorrect. An account of the long series of determinations of this important constant will be found in the same work, p. 82, &c. I believe that in the first edition of this work will also be found the first consistent attempt to introduce into chemical data an estimate of the degree of accuracy or the amount of error which attaches to our knowledge of the constants of nature and the so-

called laws of phenomena. This consideration, so familiar to astronomers, was, I believe, quite overlooked in many of the best handbooks during the earlier half of our century, and it is even yet hardly touched upon in the ordinary textbooks. The result is an entirely erroneous impression produced on the popular mind as to the degree of certainty which belongs to scientific statements.