bodies; these views being such as to include both these two rules in their most general form, and further, the rule, at that time still more new to chemists, of *multiple* proportions. He conceived bodies as composed of atoms of their constituent elements, grouped, either one and one, or one and two, or one and three, and so on. Thus, if *C* represent an atom of carbon and *O* one of oxygen, *O C* will be an atom of *carbonic oxide*, and *O C O* an atom of *carbonic acid;* and hence it follows, that while both these bodies have a definite quantity of oxygen to a given quantity of carbon, in the latter substance this quantity is *double* of what it is in the former.

The consideration of bodies as consisting of compound atoms, each of these being composed of elementary atoms, naturally led to this law of multiple proportions. In this mode of viewing bodies, Mr. Dalton had been preceded (unknown to himself) by Mr. Higgins, who, in 1789, published[4] his *Comparative View of the Phlogistic and Antiphlogistic Theories.* He there says,[5] "That in volatile vitriolic acid, a single ultimate particle of sulphur is united only to a single particle of dephlogisticated air; and that in perfect vitriolic acid, every single particle of sulphur is united to two of dephlogisticated air, being the quantity necessary to saturation;" and he reasons in the same manner concerning the constitution of water, and the compounds of nitrogen and oxygen. These observations of Higgins were, however, made casually, and not followed out, and cannot affect Dalton's claim to original merit.

Mr. Dalton's generalization was first suggested[6] during his examination of olefiant gas and carburetted hydrogen gas; and was asserted generally, on the strength of a few facts, being, as it were, irresistibly recommended by the clearness and simplicity which the notion possessed. Mr. Dalton himself represented the compound atoms of bodies by symbols, which professed to exhibit the arrangement of the elementary atoms in space as well as their numerical proportion; and he attached great importance to this part of his scheme. It is clear, however, that this part of his doctrine is not essential to that numerical comparison of the law with facts, on which its establishment rests. These hypothetical configurations of atoms have no value till they are confirmed by corresponding facts, such as the optical or crystalline properties of bodies may perhaps one day furnish.

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[4] Turner's *Chem.* p. 217.

[5] P. 36 and 37.

[6] Thomson, vol. ii. p. 291.