water at the same temperature, 1,628 volumes of it are condensed into a single volume, having a specific gravity of 0.9588, which at 4° C. becomes 1.0000. Water is thus 1,628 = (H_2O); and the weight of its volume at the temperature of formation, as compared with an equal volume of hydrogen gas or of steam, in other words, its equivalent weight, is 1,628×18=29,304, which thus corresponds to a specific gravity of 1.000; ice, at its temperature of formation, with a specific gravity of 0.9167, being 1,487=(H_2O) with an equivalent weight of 26,766. The hydrocarbon, C_4H_{10}=58, condenses to a liquid having, according to Pelouze and Cahours, a specific gravity of 0.600, which corresponds to an equivalent weight, as compared with that of water, of 17,582, or approximately 303 (C_4H_{10}), with a calculated specific gravity of 0.5997. The reciprocal of the co-efficient of condensation (or so-called molecular volume) of steam is 18, while that of the gaseous hydrocarbon is 600 : 1000 :: 58 : x = 96.66.

The chemical unit for bodies, which, like these, volatilize integrally, is fixed by the density of their vapors; while for fixed species, like anhydrous oxides and silicates, or for those which by heat undergo heterogeneous dissociation, as for example calcite and hydrous silicates, the unit may be the simplest formula deduced from analysis, or, for greater convenience in calculation in the case of oxides and silicates, may have a value corresponding to H=1, or O=8. The unit for silica thus becomes $Si O_2 \div 4 = 15$; that for alumina, $Al_2O_3 \div 6 = 17$; and that for the magnesian silicate, $Si Mg_2 O_4 \div 8 = 17.5$. Such unit-weights as these have been employed by the writer in his late essay on "A Natural Sytem in Mineralogy," in the tables of which they are represented by P; while the values got by dividing these numbers by the specific gravity of the species have been designated unit-volumes, and represented by V. The writer of that essay, in deference to the general usage of chemists, therein adopted the received terminology of "molecular weights" and "molecular volumes," and, failing at the time to grasp the full significance of his own earlier teachings as to the universality of the law of vol-