

Though some alchemists believed in the power of this "essence," (which was presumed to have a dual nature, material and spiritual), to create things, yet the best writers seem to have had a real belief in the Supreme Being as alone having power to create and destroy: they hoped only to make one form of matter into a different form, not to create it. That this could be done they believed implicitly, and a simple illustration will show in how far their belief was justified. The mineral galena, which is a sulphide of lead containing some silver, has somewhat the appearance of the metal lead itself. This, when subjected to treatment, yields lead; and the lead in turn, on heating and removing the "calx," or earthy material formed, disappears, leaving a small portion of the precious metal silver. The alchemist took no consideration of the relative *quantities* of original material and the residual silver obtained: he used his results to confirm his preconceived theory of the transmutation of the baser metal, and did not, as would have been more logical, deduce a theory from his experimental results. The alchemist's belief remained firmly fixed in his mind, was a part of his system of ethics, indeed, not only from the example just given but from his observation of nature. That lead could not, by one wave of the alchemistic wand, be converted at once into gold he quite understood; a series of purifications, of "trying in the fire," was required before the perfect metal was obtained. In *The Alchemist* this view is expressed in these lines:—

Nor can this remote matter suddenly  
Progress as from extreme unto extreme,  
As to grow gold, and leap o'er all the means,  
Nature doth first beget the imperfect, then  
Proceeds she to the perfect.

It was a far cry from the earlier alchemist to the chemists of the nineteenth century, or to the time when the ideas of transmutation had to give way,—thanks to Priestly, Lavoisier, and others,—to theories evolved from the results of careful investigation of the quantitative changes occurring during chemical operations. The enunciation of Dalton's hypothesis of atoms placed chemistry on a new basis, and was the commencement of an era of phenomenal progress in chemical science. According to this theory, matter is composed of combinations of the atoms of elementary substances with one another, which unite together, by reason of their chemical affinity, to form molecules of new