

a late period of his life. When he was a young man, about 26 years of age, he wrote to a young friend of his own, who was going to the Continent, and asked him particularly to make observations on mines and mining, and "the extracting of metals or minerals out of their ores," to learn if there were any transmutation out of one species into another, such transmutations, he adds, being "the most luciferous and many times "luciferous experiments, too, in philosophy."

Dr. George Wilson, brother of the late Sir Daniel Wilson, of Toronto University, in his essay on Boyle, published about the middle of the last century, remarks that there is no *à priori* objection to the possibility of transmutation as there is to the possibility of a self-sustaining perpetual motion. "It may be realized any day" he says.

It has been partially realized to-day, to the extent, that is, that nature has been discovered working transformations of some of the chemical elements, and science is now eagerly inquiring to how many elements the process extends. But no one has yet learned to imitate the powers of nature in this respect.

Greek Atomic Theory.

As consequences of these discoveries, two erroneous opinions have got abroad: one, of a vague popular character, that a fatal defect has been found in the basis of chemistry; the other, more definite, that the old Atomic Theory has been disestablished, and the death-knell of the Atom rung. A slight sketch may show that these opinions have no sufficient foundation.

It may occur to any one who has noticed a stone ground to powder or a drop of water subdivided to the cover of a pin-point, to inquire how far the subdivision can be carried. The question is not limited to what can be seen by the naked eye, or detected by the most powerful microscope but extends beyond the region of sight to what can be inferred by sound reasoning from careful observations.

It is, as Newton puts it, and as Lord Kelvin re-states it, not a question whether we can imagine the subdivision to go on for ever, but a practical question, whether, using the forces of Nature at our command, we come eventually to an end of subdivision, and have something indivisible, an atom. No one has ever seen an atom, and from the nature of light itself, there is no hope that we shall ever invent an instrument which will enable us to see it. Still we may safely infer the existence of atoms even though a procession of eiphers headed by unity, giving the number that would extend over the twenty-fifth part of an inch, should not help the imagination much to picture their smallness.

Sir John Herschel asserts that the idea of the atom is an absolute necessity of the "thinking mind, and is of all ages and nations."