

number of such Elements discovered up to the present time (February, 1880,) is eighty, of which sixty-four are Metals and sixteen Non-Metallic Elements, or, as they are sometimes called, Metalloids. The metals are mostly solid bodies at ordinary temperatures, one (Mercury) is liquid, and many of them can be converted into gases by heat. Certain of the non-metallic elements, Carbon, Sulphur, Phosphorus, &c., are likewise solid, one (Bromine) is liquid, and several (Hydrogen, Oxygen, Nitrogen, Chlorine) are gaseous at ordinary temperatures. Those that are solid or liquid can mostly be converted into gases by heat, and those that are gaseous can be condensed by pressure and lowering of temperature into liquids or solids. This difference of condition, whether the elements be solid, liquid or gaseous, does not necessarily represent a chemical difference.

Chemically the Elements may exist in two conditions, (1) In the free state, (2) Chemically combined. The atmosphere consists mainly of two gaseous Elements, Nitrogen and Oxygen, mixed mechanically; in the proportion of about four parts of the former to one of the latter. When thus mixed each Element retains its own properties unimpaired except by dilution. It is quite otherwise when the Elements combine chemically.

Two or more Elements chemically combined form a *Chemical Compound*. In such a compound certain properties of the Elements composing it are no longer displayed. The Elements, when they unite, counteract each other's activities as it were, and the compound acquires properties which the elements did not possess when free. Hydrogen is a gas; Oxygen is also a gas. When these two unite, heat and light are evolved, and a compound is produced, consisting of the two gases, but quite different from both in its properties. That compound is Water, which is chemically an Oxide of Hydrogen. It is not capable either of burning or of

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