with the air, that is to say, when subjected to a destructive distillation, the volatile hydrogen is all driven off in combination with some of carbon, either as a gas or as a tarry liquid, and the residue, or coke, contains only carbon contaminated with inorganic matter of the coal.

Anthracite or hard coal is supposed to have been formed like soft coal from slow decay of vegetable matter and then to have been subjected to some sort of natural distillation by which it has been deprived of all the hydrogen, nitrogen and oxygen of the original wood. It is thus a coke formed by natural agencies.

Oxygen is the most widely spread and most important of all the elements; was discovered by Priestly and Scheele 1774. It constitutes one-fifth of the atmosphere, eight-ninths of the weight of water, and at least one-third of the materials composing the solid crust of the earth; it is a tasteless, colorless, inodorless gas.

Combustion is simply chemical combination, and when the combination is violent, sufficient heat is developed to produce fire: the affinities of oxygen are remarkably strong, and it is capable of entering into combination with everything in nature except Flourine; therefore fire is generally oxygen entering into combination with the body burning.

In the fires in our houses the oxygen of the air is combining with the coal, which is carbon, to form an invisible gas, carbonic acid gas, which passes up the chimney; hence, we say that oxygen is the great supporter of combustion; of course combustion will be more violent in pure gas than in the air when it is diluted with nitrogen.

Nitrogen is the chief element of the air of which it forms four-fifths. From being an element of nitric acid, Chatal gave the gas the name of azote from its inability to support life. It exists in almost all vegetable and animal nature.

The simplest method of preparing nitrogen is to deprive air of its oxygen by passing it through a porcelain tube containing copper turnings which is surrounded by red-hot charcoal. The heated copper combines with the oxygen and the nitrogen is received in a gas-holder.

Sulphur is a yellow mineral, solid, which burns with a blue flame, giving off suffocating fumes, and is found mixed with the soil in many volcanic districts; it also appears in combination with metals, etc., forming a large class of ores named sulphides.

Sulphur is brittle, without taste or smell in its native state, but when rubbed emits a peculiar odor.