if suddenly brought to rest when moving with this velocity it would be violently agitated and would be raised one degree of temperature.

COMBUSTION.

Combustion is one of the many sources of heat, and it denotes the combination of a body with any of the substances termed supporters of combustion; with reference to the generation of steam, we may say we are restricted to oxygen, because of the small quality of hydrogen in fuel. All bodies when intensely heated become luminous; when the heat is produced by combination with oxygen they are said to be ignited, and when the body heated is in a gaseous state it forms what is termed flame.

Carbon exists in nearly a pure state in charcoal and in soot. In its combustion one pound of it produces sufficient heat to increase the temperature of 14,500 pounds of water one degree.

The volatile products of the combustion of coal are hydrogen and carbon, the union of which in the furnace are olefiants gases; which upon combining with air become carbonic acid, or carbonic oxide, etc.

Carbonic oxide is the result of imperfect combustion and carbonic acid that of perfect combustion.

One (1 lb.) pound of carbon combines with 2.66 pounds of oxygen and produces 3.66 pounds of carbonic acid gas.

Smoke is the combustible and incombustible products evolved in the combustion of fuel which pass off by the flue of a furnace, and it is composed of such portions of the hydrogen and carbon of the fuel gas as have not been supplied or combined with oxygen, and consequently have not been converted either into steam or carbonic acid; the hydrogen loses its gaseous character and returns to its elementary state of a black body and as such becomes visible.

Bituminous portion of coal is converted into the gaseous state alone; the carbonaceous portion not in the solid state. It is partly combustible and partly incombustible.

To effect the combustion of one cubic foot of oxygen is required, ten feet of atmospheric air are necessary to supply this quantity of oxygen.

An insufficient supply of air causes imperfect combustion, an excessive supply a waste of heat and fuel.