

AIR.

AIR is a mechanical mixture of nitrogen and oxygen gases. It was considered by the ancients that air had neither weight nor elastic force.

One of the earliest inventions of Ctesibius, the teacher of Hero, was the pump; and it soon came into general use; and those accustomed to them soon noted the fact that water rose above its ordinary level in the pump tube when the bucket had withdrawn the air from that part. Galileo's reflections soon led him to the conclusion that air had weight, and to his pupil Torricelli was the honor due of constructing the barometer and of finding out the relative weight of air.

Air has both weight and force, pressing in every direction, in the ratio of 2,124 lbs. per square foot of surface. Many attempts have been made to bring the elastic force of the atmosphere into use like steam.

Pascal first applied the barometer to the measuring of the heights of elevated places, on the theory that the pressure of air diminishes as we ascend, thereby causing the mercury to fall.

The action of the barometer is regulated by the weight of the air, which is heaviest during serene, settled, or frosty weather, or when contrary winds blow it toward any locality. It is lightest when saturated with vapor to the rainy point, or when contrary winds blow it away from any locality. In northern climates the variations are greatest.

The atmospheric air that surrounds us contains the oxygen that is necessary to life, in a diluted condition of one-fifth of oxygen to four-fifths of nitrogen.

An ordinary iron furnace is estimated to require 310 tons of air in twenty-four hours, or enough for 20,000 men.

That it is oxygen gas of air that is consumed in supporting ordinary combustion may be shown by covering a candle, lighted, in a bell glass, with the lower edge of the glass resting in water to prevent a further supply of air getting inside the glass, and as the enclosed oxygen of the air is consumed (the enclosed oxygen being exhausted) the flame grows less and less until it goes out, and the contents of the glass are found to be nitrogen (apparently unaltered), hydrogen and carbonic acid.