## HEAT.

THERMOMETER is the instrument used to measure heat, and the degree of the temperature is indicated by a scale of equal degrees, and the distance between freezing and boiling points is by Fahrenheit divided into 180 parts, and by Celcius Centigrade scale into 100 parts; the first is mostly used for ordinary purposes and the other for scientific subject.

Heat is communicated by direct contact, or conduction by right lines, or radiation, and by carrying, or convection.

An English heat unit is that which is required to raise the temperature of one pound of water one degree Fahrenheit, the expenditure of heat is the same whether two pounds of water be raised one degree, or one pound of water be raised two degrees.

The English unit of work, which consists of the sustained exertion of pressure through space, is one foot-pound ; that is, a pressure of one pound exerted through a space of one foot.

The unit of heat, then, is capable of raising seven hundred and seventy-two pounds weight one foot high, and its mechanical equivalent is expressible by seven hundred and seventy-two foot-pounds; then one English thermal unit, or one degree, or one degree Fahrenheit, in one pound of water, 772 foot-pounds; one degree Centigrade in one pound of water, 1,389 foot-pounds. A French thermal unit is nearly equal to four English thermal units ; 1. to 4.

Theory of all gases, or vapors, is that of atoms moving or vibrating in all ways, with rapidity and pressure, being the impact of the numerous atoms striking against the sides of the vessel containing the gas and vapor.

When the piston in the cylinder yields to the pressure of steam, the atmosphere rebounds from it with the same velocity with which they strike, but will return after each succeeding blow, with a velocity continually decreasing as the piston continues to recede, and so the temperature diminishes. Water descending seven hundred and seventy-two feet acquires a velocity of two hundred and twenty-three feet per second, and