

found in the increase of temperature in the ball itself and the plate that arrested it. All of this gathered up and placed back into energy of position would, if again released, fire the shot with the same energy as before.

The mechanical energy of a shot does not represent all of the energy created by the burning of the powder. A part of it has escaped with the heated gases that rushed from the muzzle of the gun, and a part is stored in the ball as heat in overcoming its inertia.

This brings us to the discussion of what is called the "mechanical equivalent" of heat. It has been proven by experiment that the quantity of heat necessary to raise one pound of water to the temperature of 1 degree Fahrenheit is equal to that generated by a pound weight falling from a height of 772 feet against the surface of the earth. Conversely, an amount of heat necessary to raise a pound of water 1 degree Fahrenheit in temperature would, if all is converted into mechanical energy, be sufficient to raise a pound weight 772 feet above the earth. The unit of measurement called the "foot-pound" has been adopted as a means of determining the amount of energy expended in doing a given piece of work. The foot-pound is a unit of energy as expressed in work, and is that amount of energy which is necessary to raise one pound weight one foot high against the force of