HEAT

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PREFACE

This pamphlet is offered to physicists for what it is worth and is an attempt to put the subject of thermodynamics on an understandable basis. The salient features dealt with are these:

Heat is a diamagnetic or negative force acting in opposition to the positive force of atomic attraction.

Temperature is the negative atomic stress produced between the atoms.

The work value of the unit of heat is not 778 foot pounds, but is proportionate to the temperature.

The unit of energy 778 foot pounds may apply anywhere on the scale of temperature without reference to the unit of heat.

There is no such thing as latent heat. There is only developed and undeveloped energy.

The properties of different forms of matter cannot be compared by quantities of

equal weight. The specific heat of different materials should be dealt with by equal volumes.

Gases do not expand proportionate to their pressure per square inch, but expanded adiabatically the pressure varies inversely as the square of the distance between the atoms.

A gas and a vapor differ only in the intensity of the force of attraction between the atoms.

The specific heat of matter has no apparent relation to the atomic weights.

The unit of energy 778 foot pounds has no sufficient basis for its adoption.

To prove this may seem like a large undertaking, but the writer feels satisfied that if the pamphlet is carefully perused it will be found that these points have been fully established. It is not given as a full dissertation on the subject, but is presented in the hope that it will make one step forward in developing the latent meaning in our present day thermodynamics.

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Heat—Diamagnetic Force:

While we do not know what heat actually is, we can best study it as having quantity and conditions in the same way as we deal with electricity by amperes and volts.

Heat, as distinguished from temperature, may be said to be that which produces a negative, repulsive or diamagnetic force between the atoms tending to produce expansion or tending to overcome or reduce the positive force of attraction and cohesion. Temperature indicates the condition or intensity of the negative stress between the atoms and indicates the condition under which heat will pass from one body to another, but does not indicate the number of units of diamagnetic energy present. Temperature indicates the frequency of the vibration induced by the transfer of diamagnetic force from one body to another. No

two forms of matter have the same specific heat, because no two forms of matter have a force of atomic attraction of the same intensity.

Unit of Heat—Unit of Energy:

The heat unit as now defined, viz.:—"The amount of heat necessary to raise one pound of water from 499° F. to 500° F. and having a work value equivalent of 774 ft. lbs." —though definite in itself, does not seem to be clearly understood in some respects. The definition states quantity and condition without differentiating between them. "One unit of heat" defines a definite quantity which has no work value whatever as no condition is stated, and may be characterized as the diamagnetic force produced in one unit of matter, but "One unit of heat" developed at the heat density or diamagnetic stress equivalent to 500° F. temperature in water, has a work equivalent of about 774 ft. lbs., just as one ampere of current has no work value, but one ampere of current

at 500 volts pressure has an established work value.

The heat unit as defined may be described in two entirely distinct and separate ways, viz.: producing one unit of heat as by friction from zero to 500°, equivalent to about 774 ft. lbs., or as in raising the temperature of 500 units of heat in the one lb. of water 1°, equivalent to about 774 ft. lbs., so that when we raise the temperature of one lb. of water from 499° to 500° we actually increase the temperature of 500 units of heat one degree, increasing the diamagnetic force the equivalent of 774 ft. lbs., and this should be called one unit of diamagnetic energy, not one unit of heat.

The one unit of matter as associated with one unit of heat as defined is, therefore, $\frac{1}{500}$ of one lb. of water.

The action may be compared to raising 1.55 lbs. of water from sea-level to a height of 500 feet, equal to 775 ft. lbs., this being similar to increasing the temperature of one unit of matter from zero to 500°, as against

raising 775 lbs. of water one ft. high from 499 ft. to 500 ft. equal to 775 ft. lbs., this being similar to increasing the temperature of 500 units of matter one degree from 499° to 500°.

B. T. U.:

The British Thermal Unit as used in thermo dynamics does not relate to heat and temperatures except in an indirect way. The work equivalent of B. T. U. 778 ft. lbs. is supposed to be the work equivalent of one unit of heat as defined or one unit of heat developed by friction against a temperature of 520° absolute. The work equivalent, therefore, applies only to the temperatures from zero to 520° and it has, in fact, no available work value whatever, as the temperatures involved are all below normal.

The B. T. U. as used is an arbitrary unit energy or work similar to the joule and without any direct reference to heat at specific temperatures, it might just as well have