Definitions of Units

ACTIVITY. Power or rate of doing work; unit: the watt.

AMPERE. Unit of electrical current. The international ampere, "which is one-tenth of the unit of current of the C.G.S. system of electromagnetic units, and which is represented sufficiently well for practical use by the unvarying current which, when passed through a solution of nitrate of silver in water, and in accordance with accompanying specifications, deposits silver at the rate of 0.001118 of a gram per second."

The ampere = 1 coulomb per second = 1 volt through 1 ohm = 10^{-1} E. M. U. = 3×10^{9} E. S. U. (E. M. U. = C. G. S. electromagnetic units. E. S. U. = C. G. S. electrostatic units.)

Amperes = volts/ohms = watts/volts = $(\text{watts/ohms})^{\frac{1}{2}}$.

Amperes $\times$ volts = $\text{amperes}^2 \times$ ohms = watts.

ANGSTROM. Unit of wave-length = 10^{-10} meter.

ATMOSPHERE. Unit of pressure.

English normal = 14.7 pounds per sq. in. = 29.929 in. = 760.18 mm. Hg. 32°F.

French normal = 760 mm. of Hg. 0° C. = 29.922 in. = 14.70 lbs. per sq. in.

BOUGIE DECIMALE. Photometric standard.

BRITISH THERMAL UNIT. Heat required to raise one pound of water at its temperature of maximum density, 1° F. = 252 gram-calories.

CALORY. Small calory = gram-calory = therm = quantity of heat required to raise one gram of water at its maximum density, one degree Centrigrade.

Large calory = kilogram-calory = 1000 small calories = one kilogram of water raised one degree Centigrade at the temperature of maximum density.

CANDLE. Photometric standard.

CARAT. The diamond carat standard in U. S. = 200 milligrams. Old standard = 205.3 milligrams = 3.168 grains.

The gold carat: pure gold is 24 carats; a carat is 1/24 part.

CARCEL. Photometric standard.

CIRCULAR AREA. The square of the diameter = 1.2733 $\times$ true area.

True area = 0.785398 $\times$ circular area.

COULOMB. Unit of quantity. The international coulomb is the quantity of electricity transferred by a current of one international ampere in one second. $= 10^{-1}$ E. M. U. $= 3 \times 10^{9}$ E. S. U.

Coulombs = (volts-seconds)/ohms = amperes × seconds.

CUBIT = 18 inches.

DAY. Mean solar day. = 1440 minutes = 86400 seconds = 1.0027379 sidereal day.

Sidereal day = 86164.10 mean solar seconds.

DIGIT. 3/4 inch; 1/12 the apparent diameter of the sun or moon.

DIOPTER. Unit of "power" of a lens. The number of diopters = the reciprocal of the focal length in meters.

DYNE. C. G. S. unit of force = that force which acting for one second on one gram produces a velocity of one centimeter per second.

= weight in grams divided by the acceleration of gravity in cm. per sec.

ELECTROCHEMICAL EQUIVALENT is the ratio of the mass in grams deposited in an electrolytic cell by an electrical current to the quantity of electricity.

ENERGY. *See* Erg.

ERG. C. G. S. unit of work and energy = one dyne acting through one centimeter.

FARAD. Unit of electrical capacity. The international farad is the capacity of a condenser charged to a potential of one international volt by one international coulomb of electricity. $= 10^{-9}$ E. M. U. $= 9 \times 10^{11}$ E. S. U.

The one-millionth part of a farad (microfarad) is more commonly used.

Farads = coulombs/volts.

FOOT-POUND. The work which will raise one pound one foot high.

FOOT-POUNDALS. The English unit of work = foot-pounds/g.

g. The acceleration produced by gravity.

GAUSS. A unit of intensity of magnetic field = 1 E. M. U. $= 1/3 \times 10^{-10}$ E. S. U.

GRAM-CENTIMETER. The gravitation unit of work = g. ergs.

GRAM-MOLECULE = x grams where x = molecular weight of substance.

GRAVITATION CONSTANT = G in formula $G \frac{m_1 m_2}{r_2} = 666.07 \times 10^{-10}$ cm.^{3}/gr. sec.^{2}

HEAT OF THE ELECTRIC CURRENT generated in a metallic circuit without self-induction is proportional to the quantity of electricity which has passed in coulombs multiplied by the fall of potential in volts, or is equal to (coulombs × volts)/4.181 in small calories.

The heat in small or gram-calories per second = (amperes^2 × ohms)/4.181 = volts^2/ (ohms × 4.181) = (volts × amperes)/4.181 = watts/4.181.

HEAT. Absolute zero of heat = −273.13° C, −459.6° Fahrenheit, −218.5° Reaumur.

HEFNER UNIT. Photometric standard.

HENRY. Unit of induction. It is "the induction in a circuit when the electromotive force induced in this circuit is one international volt, while the inducing current varies at the rate of one ampere per second." = 10^9 E. M. U. = $1/9 \times 10^{-11}$ E. S. U.

HORSE-POWER. The practical unit of power = 33,000 pounds raised one foot per minute: = 550 ft. pds. per sec. = 0.746 kilowatt = 746 watts.

JOULE. Unit of work = 10^7 ergs.

Joules = (volts^2 × seconds)/ohms = watts × seconds = amperes^2 × ohms × sec.

JOULE'S EQUIVALENT. The mechanical equivalent of heat = 4.185 × 10^7 ergs.

KILODYNE. 1000 dynes. About 1 gram.

LUMEN. Unit of flux of light-candles divided by solid angles.

MEGABAR. Unit of pressure = 0.987 atmospheres.

MEGADYNE. One million dynes. About one kilogram.

METER CANDLE. The intensity lumination due to standard candle distant one meter.

MHO. The unit of electrical conductivity. It is the reciprocal of the ohm.

MICRO. A prefix indicating the millionth part.

MICROFARAD. One millionth of a farad, the ordinary measure of electrostatic capacity.

MICRON. (μ) = one millionth of a meter.

MIL. One thousandth of an inch.

MILLI-. A prefix denoting the thousandth part.

MONTH. The anomalistic month = time of revolution of the moon from one perigee to another = 27.55460 days.

The nodical month = draconitic month = time of revolution from a node to the same node again = 27.21222 days.

The sidereal month = the time of revolution referred to the stars = 27.32166 days (mean value), but varies by about three hours on account of the eccentricity of the orbit and "perturbations."

The synodic month = the revolution from one new moon to another = 29.5306 days (mean value) = the ordinary month. It varies by about 13 hours.

OHM. Unit of electrical resistance. The international ohm is based upon the ohm equal to 10^9 units of resistance of the C. G. S. system of electromagnetic units, and "is represented by the resistance offered to an unvarying electric current by a column of mercury, at the tem-

perature of melting ice, 14.4521 grams in mass, of a constant cross section and of the length of 106.3 centimeters." = 10^9 E. M. U. = $1/9 \times 10^{-11}$ E. S. U.

International ohm = 1.01367 B. A. ohms = 1.06292 Siemens' ohms.

B. A. ohm = 0.98651 international ohms.

Siemens' ohm = 0.94080 international ohms.

PENTANE CANDLE. Photometric standard.

PI = π = ratio of the circumference of a circle to the diameter = 3.14159265359.

POUNDAL. The British unit of force. The force which will in one second impart a velocity of one foot per second to a mass of one pound.

RADIAN = $180°/\pi = 57.29578° = 57° 17' 45'' = 206625''$.

SECOHM. A unit of self-induction = 1 second × 1 ohm.

THERM = small calory = quantity of heat required to warm one gram of water at its temperature of maximum density one degree Centigrade.

THERMAL UNIT, BRITISH = the quantity of heat required to warm one pound of water at its temperature of maximum density one degree Fahrenheit = 252 gram-calories.

VOLT. The unit of electromotive force (E. M. F.). The international volt is "the electromotive force that, steadily applied to a conductor whose resistance is one international ohm, will produce a current of one international ampere, and which is represented sufficiently well for practical use by 1000/1434 of the electromotive force between the poles or electrodes of the voltaic cell known as Clark's cell, at a temperature of 15° C. and prepared in the manner described in the accompanying specification." = 10^8 E. M. U. = 1/300 E. S. U.

VOLT-AMPERE. Equivalent to Watt/Power factor.

WATT. The unit of electrical power = 10^7 units of power in the C. G. S. system. It is represented sufficiently well for practical use by the work done at the rate of one Joule per second.

Watts = volts × amperes = amperes^2 × ohms = volts^2/ohms (direct current or alternating current with no phase difference).

Watts × seconds = Joules.

WEBER. A name formerly given to the coulomb.

YEAR.

Anomalistic year	=	365	days,	6	hours,	13	minutes, 48 seconds.
Sidereal "	=	365	"	6	"	9	" 9.314 "
Ordinary "	=	365	"	5	"	48	" 46+ "
Tropical "	same as the ordinary year.						