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TABLES
OF THE PROPERTIES OF
SATURATED
STEAM

AND OTHER VAPORS

CECIL H. PEABODY

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TABLES

OF THE PROPERTIES OF

SATURATED STEAM

AND OTHER VAPORS.

BY

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CECIL H. PEABODY.

SATURATED STEAM, AND OTHER VAPORS.

A COMPARISON of the several tables of the properties of saturated steam, expressed in English units, reveals discrepancies of considerable magnitude; and investigation shows that, while all are in some manner founded on the experiments of Regnault, various methods of calculation have been used, and in some cases other experimental data have been employed. A review of the whole subject, in connection with the preparation of notes on thermodynamics for the use of the students of the Massachusetts Institute of Technology, made it seem important to calculate a set of tables, to accompany those notes, founded on the best and most recent data.

In presenting the tables for general use, it appears proper to state in full the data and the methods of calculation employed, so that each one may see the degree of accuracy and correctness of the tables, and the reliance to be placed on them.

Tables of the properties of other vapors have been added, which will be discussed hereafter.

Pressure of Saturated Steam.—As a conclusion from all the experiments on the tension of saturated steam, Regnault gives, in the *Mémoires de l'Institut de France, etc., Tome XXI.*, the following data:—

TEMPERATURE	PRESSURE
C.	MM. OF MERCURY.
—32	0.32
—16	1.29
0	4.60
25	23.55
50	91.98
75	288.50
100	760.00
130	2030.0
160	4651.6
190	9426.
220	17390.
—20	0.91
+40	54.91

From these data he calculated, by the aid of seven-place logarithms, the following formulæ, which give the pressure in millimetres of mercury for any temperature in degrees Centigrade:—

A. For steam from -32° to 0° C.

$$p = a + ba^n.$$

$$a = -0.08038.$$

$$\log b = 9.6024724 - 10.$$

$$\log a = 0.033398.$$

$$n = 32^{\circ} - t.$$

B. For steam from 0° to 100° C.

$$\log p = a - ba^n + c\beta^n.$$

$$a = 4.7384380.$$

$$\log b = 0.6116485.$$

$$\log c = 8.1340339 - 10.$$

$$\log a = 9.9967249 - 10.$$

$$\log \beta = 0.006865036.$$

$$n = t.$$

C. For steam from 100° to 220° C.

$$\log p = a - ba^n + c\beta^n.$$

$$a = 5.4583895.$$

$$\log b = 0.4121470.$$

$$\log c = 7.7448901 - 10.$$

$$\log a = 9.997412127 - 10.$$

$$\log \beta = 0.007590697.$$

$$n = t - 100.$$

D. For steam from -20° to 220° C.

$$\log p = a - ba^n - c\beta^n.$$

$$a = 6.2640348.$$

$$\log b = 0.1397743.$$

$$\log c = 0.6924351.$$

$$\log a = 9.994049292 - 10.$$

$$\log \beta = 9.998343862 - 10.$$

$$n = t + 20.$$

By aid of the formulæ *A* and *B*, Regnault calculated and recorded tables of the pressures of saturated steam for temperatures from -32° to 100° C. The formula *D* was calculated from the data given above for the temperatures -20° , $+40^{\circ}$, 100° , 160° , and 220° C., and was intended to represent the whole range of experiments. By this formula, instead of formula *C*, he calculated the pressures set down in his tables for temperatures from 100° C. to 220° C.

Wishing to obtain greater accuracy for meteorological work, Moritz recalculated Equation *B*, using ten-place logarithms, and obtained constants

that differ but little from those that will be given later. Some of the more recent tables in the French system were calculated by his equations.

Equations for the Pressure of Steam at Paris. — In view of the preceding statements, it appeared desirable to re-calculate the constants for Equations *B* and *C*, with a degree of accuracy that should exclude any doubt as to the reliability of the results. Accordingly, the logarithms required were taken from Vega's ten-place table, and then the remainder of the calculations were carried on with natural numbers, checking by independent methods, with the following results: —

B. For steam from 0° to 100° C.

$$\log p = a - ba^n + c\beta^n.$$

$$a = 4.7393622142.$$

$$\log b = 0.6117400190.$$

$$\log c = 8.1320378383 - 10.$$

$$\log \alpha = 9.996725532820 - 10.$$

$$\log \beta = 0.006864675924.$$

$$n = t.$$

C. For steam from 100° to 220° C.

$$\log p = a - ba^n + c\beta^n.$$

$$a = 5.4574301234.$$

$$\log b = 0.4119787931.$$

$$\log c = 7.7417476470 - 10.$$

$$\log \alpha = 9.99741106346 - 10.$$

$$\log \beta = 0.007642489113.$$

$$n = t - 100.$$

To show the degree of accuracy attained, the following tables are given: —

EQUATION *B*.

<i>t</i> .	<i>p</i> .	LOG <i>p</i> FROM TABLE OF LOGARITHMS.	LOG <i>p</i> CALCULATED BY EQUATION.
0	4.60	0.6627578317	.....
25	23.55	1.3719909115	1.37199097
50	91.98	1.9636934052	1.96369346
75	288.50	2.4601458175	2.46014587
100	760	2.8808135923	2.88081365

EQUATION *C*.

<i>t</i> .	<i>p</i> .	LOG <i>p</i> FROM TABLE OF LOGARITHMS.	LOG <i>p</i> CALCULATED BY EQUATION.
100	760.00	2.8808135923	.....
130	2030.0	3.3074960379	3.307496036
160	4651.6	3.6676023618	3.667602359
190	9426	3.9743274354	3.974327428
220	17390	4.2402995820	4.240299575

The results from Equation *C* are quite satisfactory; for the errors come in the ninth place of decimals, and one place of decimals is unavoidably lost in the application of the formula. Equation *B* was calculated after Equation *C* and the numerical work was not carried to so large a number of decimal places. For the calculation of tables, the constants are carried to seven places of significant figures only; this gives six significant figures in the result, of which five are recorded in the table.

Pressure of Steam at Latitude 45°.—French System.—It is customary to reduce all measurements to the latitude of 45°, and to sea-level. The standard thermometer should then have its boiling and freezing points determined under, or reduced to such conditions. The value of *g*, the acceleration due to gravity, is, at Paris, latitude 48° 50' 14" and 60 metres above sea-level, 9.809218 metres; and at 45°, and at sea-level, it is 9.806056 metres. Consequently, 760 mm. of mercury at 45° gives a pressure equal to that of 759.755 mm. at Paris; and this corresponds to a temperature of 99.°991 C.

In other words, the thermometer which is standard at 45° has each degree 0.99991 of the length of the degree of a thermometer standard at Paris.

To reduce Equation *B* to 45° latitude, we have

$$\log p = a + \log \frac{980.9218}{980.6056} - ba^{0.99991t} + c\beta^{0.99991t};$$

and for Equation *C*,

$$\begin{aligned} \log p &= a + \log \frac{980.9218}{980.6056} - ba^{(0.99991t-100)} + c\beta^{(0.99991t-100)} \\ &= a + \log \frac{980.9218}{980.6056} - ba^{-0.00009(t-100)} + c\beta^{-0.00009(t-100)}. \end{aligned}$$

The resulting equations which were used in calculating Table III are

B. For steam from 0° to 100° C. at 45° latitude.

$$\log p = a_1 - ba_1^n + c\beta_1^n.$$

$$a_1 = 4.739502.$$

$$\log b = 0.6117400.$$

$$\log c = 8.13204 - 10.$$

$$\log a_1 = 9.996725828 - 10$$

$$\log \beta_1 = 0.0068641.$$

$$n = t.$$

C. For steam from 100° to 220° C. at 45° latitude.

$$\log p = a_1 - b_1a_1^n + c_1\beta_1^n.$$

$$a_1 = 5.457570.$$

$$\log b_1 = 0.4120021.$$

$$\log c_1 = 7.74168 - 10.$$

$$\log a_1 = 9.997411296 - 10.$$

$$\log \beta_1 = 0.0076418.$$

$$n = t - 100.$$

Pressure of Steam at Latitude 45°.—English System.—To reduce the equations for the pressure of steam, so that they will give the pressures in pounds on the square inch for degrees Fahrenheit, there are required the comparison of measures of length, and of weight, the comparison of the scales of the thermometers, and the specific gravity of mercury.

Professor Rogers (*Proceedings of the Am. Acad. of Arts and Sciences*, 1882-83, also *Additional Observations*, etc.) gives for the length of the metre, 39.3702 inches. This differs from the value given by Capt. Clarke (*Proceedings of the Royal Society*, vol. xv., 1866), by an amount that does not affect the values in the tables; his value being 39.370432 inches.

Professor Miller (*Phil. Transactions*, cxlvi., 1856) gives for the weight of one kilogram, 2.20462125 pounds.

Regnault gives, for the weight of one litre of mercury, 13.5959 kilograms. The degree Fahrenheit is $\frac{9}{5}$ of the length of the degree Centigrade.

$$\text{Let} \quad k = \frac{13.5959 \times 2.204621}{39.3702};$$

then the equations *B* and *C* have for the reduction to degrees Fahrenheit, and pounds on the square inch,

$$\log p = a_1 + \log k - ba_1^{\frac{1}{2}} + c\beta_1^{\frac{1}{2}},$$

$$\log p = a_1 + \log k - b_1a_1^{\frac{1}{2}} + c_1\beta_1^{\frac{1}{2}}.$$

The resulting equations, which were used in calculating Tables I and II, are:—

B. For steam from 32° to 212° F., in pounds on the square inch.

$$\log p = a_2 - ba_2^{\frac{1}{2}} + c\beta_2^{\frac{1}{2}}.$$

$$a_2 = 3.025908.$$

$$\log b = 0.6117400.$$

$$\log c = 8.13204 - 10.$$

$$\log a_2 = 9.998181015 - 10.$$

$$\log \beta_2 = 0.0038134.$$

$$n = t - 32.$$

C. For steam from 212° to 428° F., in pounds on the square inch.

$$\log p = a_2 - b_1a_2^{\frac{1}{2}} + c_1\beta_2^{\frac{1}{2}}.$$

$$a_2 = 3.743976.$$

$$\log b_1 = 0.4120021.$$

$$\log c_1 = 7.74168 - 10.$$

$$\log a_2 = 9.998561831 - 10.$$

$$\log \beta_2 = 0.0042454.$$

$$n = t - 212.$$

All of the foregoing equations make the pressure a function of the temperature on the scale of the air-thermometer. It will be assumed that the difference between that scale and the absolute scale may be neglected.

Other Equations for the Pressure of Steam.—Rankine, in his *Steam Engine and other Prime Movers*, gives the following equation:—

$$\log p = A - \frac{B}{T} - \frac{C}{T^2}.$$

For pounds on the square inch, corresponding to degrees Fahrenheit,—

$$A = 6.1007.$$

$$\log B = 3.43642.$$

$$\log C = 5.59873.$$

$$T = t + 461.^\circ \text{ F.}$$

This equation has been largely used for calculating tables on the English system. The following table will give a comparison between the results from this formula and those from Formulæ *B* and *C*.

TEMPERATURE.	PRESSURE.	
	Regnault at 45° latitude.	Rankine.
32	0.0890	0.083
77	0.4555	0.452
122	1.7789	1.78
167	5.579	5.58
212	14.99	14.70
257	33.711	33.71
302	69.27	69.21
347	129.79	129.8
392	225.56	225.9
428	336.26	336.3

Differential Co-efficient $\frac{dp}{dt}$.—As will be seen later, the differential co-efficient $\frac{dp}{dt}$ is used in calculating the volume and density of saturated vapors.

From the general equation of the form,

$$\log p = a + b\alpha^n + c\beta^n,$$

differentiation gives

$$\frac{1}{p} \frac{dp}{dt} = \frac{1}{M^2} b \log \alpha \cdot \alpha^n + \frac{1}{M^2} c \log \beta \cdot \beta^n,$$

in which *M* is the modulus of the common system of logarithms.

The equation may be written,—

$$\frac{1}{p} \frac{dp}{dt} = A\alpha^n + B\beta^n.$$

The calculation of the values of the constants gives the following results for latitude 45°:—

French units.

B. For 0° to 100° C., mm. of mercury,

$$\log A = 8.8512729 - 10.$$

$$\log B = 6.69305 - 10.$$

$$\log a_1 = 9.996725828 - 10.$$

$$\log \beta_1 = 0.0068641.$$

C. For 100° to 220° C., mm. of mercury.

$$\log A = 8.5495158 - 10.$$

$$\log B = 6.34931 - 10.$$

$$\log a_1 = 9.997411296 - 10.$$

$$\log \beta_1 = 0.0076418.$$

English units.

B. For 32° to 212° F., pounds on the square inch.

$$\log A = 8.5960005 - 10.$$

$$\log B = 6.43778 - 10.$$

$$\log a_2 = 9.998181015 - 10.$$

$$\log \beta_3 = 0.0038134.$$

C. For 212° to 428° F., pounds on the square inch,

$$\log A = 8.2942434 - 10.$$

$$\log B = 6.09403 - 10.$$

$$\log a_2 = 9.998561831 - 10.$$

$$\log \beta_3 = 0.0042454.$$

Heat of the Liquid and Specific Heat.—A preliminary series of experiments convinced Regnault that the specific heat of water at low temperature is unity. To test the specific heat at higher temperatures, he ran hot water from a boiler, and at a known temperature, into a calorimeter in which the temperature varied from 8° to 14° C., and the resulting upper temperature varied from 17° to 29° C. Knowing the original weight of water in the calorimeter, the weight run in from the boiler, and the initial and final temperatures in the calorimeter, he calculated the mean specific heat of water between the temperature of the boiler and the final temperatures of the calorimeter. A series of forty such experiments was made, with the temperature of the boiler varying from 108° to 192° C., from which Regnault concluded that the mean specific heat from 0° to 100° is 1.005; and from 0° to 200° , 1.016. The corresponding heat of the liquid, i.e., the heat required to raise one kilogram of water from 0° to a given temperature, t , is

For 100°	.	.	.	100.5
200°	.	.	.	203.2

Assuming an equation of the form

$$q = t + At^2 + Bt^3,$$

and solving for the two constants by aid of the two known values of q , the following equation, which is commonly used, is deduced:—

$$q = t + 0.00002t^2 + 0.0000003t^3.$$

The specific heat at any temperature is, therefore, —

$$c = \frac{dq}{dt} = 1 + 0.00004t + 0.0000009t^2.$$

These equations are for use with the Centigrade scale; for the Fahrenheit scale, a given temperature may be reduced to the Centigrade scale, and then introduced in the same equations.

The process of making the experiments is really a complex one; for the water, in leaving the boiler, has work done on it by the steam pressure in the boiler, and it has a certain velocity impress on it at the same time, and again, in entering the calorimeter, it does work against the atmospheric pressure, and the kinetic energy of its motion is changed into heat. At higher temperatures there is a double change of state; part of the water changes to steam on leaving the boiler, and that steam is condensed again in the calorimeter. It is probable that the error of neglecting the effect of these several actions is inconsiderable.

The degree of accuracy to be accorded to this work is indicated by the fact that Regnault gives four significant figures in stating the data for the calculation of the constants in the equations.

Rowland's Experiments.—A series of experiments was made by Rowland at Baltimore, to determine the mechanical equivalent of heat, which gave a delicate method of determining the heat of the liquid, and the specific heat.

The apparatus used was similar to that used by Joule, with modifications to give greater certainty of results. The calorimeter was of larger size, and the paddle had the upper vanes curved like the blades of a centrifugal pump, to give a strong circulation up through the centre, past the thermometer for taking the temperatures, and down at the outside. The paddle was driven by a petroleum engine, and the power applied was measured by making the calorimeter into a friction brake, with two arms at which the turning moment was measured. Radiation was made as small as possible, and then was made determinate by use of a water-jacket outside of the calorimeter.

The experiments consisted essentially in delivering a measured amount of work to the water in the calorimeter, and in noting the rise of temperature produced thereby.

The whole range covered by the experiments was from 2° to 41° C. The results show that 430 kilogrammetres of work are required to raise one kilogramme of water from 2° to 3° C. Assuming that the same amount will be required to raise the same weight from 0° to 1° and from 1° to 2° , the following table has been arranged from Rowland's final table of results:—

ROWLAND'S MECHANICAL EQUIVALENT OF HEAT.

Degrees, C.	Total Number of Kilogram-meters.	Mechanical Equivalent of Heat.	Heat of the Liquid, Experimental.	Heat of the Liquid, Calculated.	Degrees, C.	Total Number of Kilogram-meters.	Mechanical Equivalent of Heat.	Heat of the Liquid, Experimental.	Heat of the Liquid, Calculated.
1	430	-	1.0008	1.007	22	9424	426.1	22.065	22.063
2	860	-	2.0135	2.014	23	9850	426.0	23.063	23.061
3	1290	-	3.0204	3.022	24	10277	425.9	24.062	24.060
4	1721	-	4.0295	4.029	25	10701	425.8	25.055	25.058
5	2150	429.8	5.0330	5.036	26	11128	425.7	26.054	26.053
6	2580	429.5	6.0408	6.040	27	11553	425.6	27.050	27.048
7	3009	429.3	7.0452	7.045	28	11978	425.6	28.045	28.042
8	3439	429.0	8.0520	8.049	29	12399	425.5	29.031	29.037
9	3868	428.8	9.0564	9.054	30	12828	425.6	30.035	30.032
10	4296	428.5	10.059	10.058	31	13253	425.6	31.030	31.027
11	4723	428.3	11.058	11.060	32	13675	425.6	32.018	32.023
12	5151	428.1	12.061	12.061	33	14101	425.7	33.016	33.018
13	5578	427.9	13.060	13.063	34	14527	425.7	34.011	34.014
14	6006	427.7	14.063	14.064	35	14952	425.8	35.008	35.009
15	6433	427.4	15.065	15.066	36	15379	425.8	36.008	36.007
16	6861	427.2	16.064	16.066	37	15805	-	37.007	37.005
17	7289	427.0	17.066	17.066	38	16231	-	38.003	38.004
18	7717	426.8	18.068	18.066	39	16657	-	39.000	39.002
19	8144	426.6	19.068	19.066	40	17083	-	39.998	40.000
20	8571	426.4	20.068	20.066	41	17508	-	40.993	-
21	8997	426.2	21.065	21.064					

In the above table, column 1 gives the number of degrees above freezing on the Centigrade scale; column 2 gives the number of kilogrammetres required to raise one kilogramme of water from freezing point to the given temperature; column 3 is Rowland's mechanical equivalent of heat at the given temperature derived from 10° intervals on column 2; column 4 is obtained by dividing the numbers in column 2 by the mechanical equivalent of heat at 16½° C., or 62° F., from column 3; and column 5 is calculated by considering the specific heat to be constant for each five degrees of temperature. These specific heats were derived from a curve obtained by plotting temperatures for abscissæ, and heats of the liquid for ordinates. The values of the specific heats will be given later, in connection with those for higher temperatures.

A review of the preceding table shows that the specific heat at low temperatures varies quite markedly, so that it appeared advisable to investigate the effect of this variation on Regnault's experiments already quoted. This was done quite expeditiously by multiplying the mean specific heat given by him for his several experiments by the true average specific heat for the range of temperature in the calorimeter. This corrected specific heat was then used to calculate the increase of heat from the final temperature of the calorimeter to the temperature of the boiler, and that increase was added to the heat of the liquid from the table to find the heat of the liquid at the

temperature of the boiler. The results were then plotted as before, and compared with the heats of the liquid derived from Regnault's mean specific heats uncorrected. The points by the corrected method were a little more regularly arranged than the points obtained by assuming the specific heat to be unity at low temperatures; but the improvement was inconsiderable. The inequality of the specific heat at low temperatures is seldom so much as the unavoidable errors of the method.

It appeared, that if the specific heat was assumed to be constant, from 40° to 45° , from 45° to 155° , and from 155° to 200° C., the straight lines thus drawn represented the experimental values as recalculated quite nearly; and, further, they represented the uncorrected experimental values more nearly than Regnault's equation.

Specific Heat of Water.—The combination of Rowland's and Regnault's experiments on the heat of the liquid by the method described gives the specific heats set down in the following table, Centigrade scale:—

				SPECIFIC HEAT.		
From 0° to	5° C.	32° to	41° F.	.	.	1.0072
5°	10°	41°	50°	.	.	1.0044
10°	15°	50°	59°	.	.	1.0016
15°	20°	59°	68°	.	.	1.
20°	25°	68°	77°	.	.	0.9984
25°	30°	77°	86°	.	.	0.9948
30°	35°	86°	95°	.	.	0.9954
35°	40°	95°	104°	.	.	0.9982
40°	45°	104°	113°	.	.	1.
45°	155°	113°	311°	.	.	1.008
155°	200°	311°	392°	.	.	1.046

Thermal Unit.—Heat is measured in calories, or British thermal units (*BTU*). A calorie commonly is defined as the heat required to raise one kilogramme of water from freezing point to 1° C.; and a British thermal unit, that required to raise one pound from 32° to 33° F. Nothing is known about the specific heat of water from 0° to 2° C.; consequently the commonly accepted value of the thermal unit is an ideal quantity inferred from the behavior of water at higher temperatures. It is more scientific to take an easily verified quantity for the standard; and there is a practical convenience in choosing 62° F. for the standard temperature, because it is near the mean temperature of the air during experimental work. Therefore, it is near the mean temperature in the calorimeter during ordinary work with that instrument; and the specific heat of water for the range of temperature in the calorimeter may usually be considered to be unity without error, unless great refinement is desired.

The *BTU* in Tables I and II is taken to be the heat required to raise

one pound of water from 62° to 63° F. This agrees substantially with the definition of the calorie, as the heat required to raise one kilogramme of water from 15° to 16° C.

In the tables for other vapors than steam, the old definition for the calorie, and Regnault's value for the heat of the liquid, are retained, to avoid entire recalculation.

Mechanical Equivalent of Heat.—The mechanical equivalent in metre-kilogrammes of one calorie at 16 $\frac{1}{2}$ ° C., deduced from Rowland's experiments in the third column of the table on page 58, is 427.1.

Since the value given by Joule is commonly quoted, it will be of interest to make a comparison of his latest work (1873) with Rowland's, as given in the following table:—

Temperature.	Joule's Value at Manchester, English system.	Reduced to the Air Thermometer and to the latitude of Baltimore.		Rowland's Value, corresponding.
		English.	French.	
14.7°	772.7	776.1	425.8	427.6
12.7°	774.6	778.5	427.1	428.0
15.5°	773.1	776.4	426.0	427.3
14.5°	767.0	770.5	422.7	427.5
17.3°	774.0	777.0	429.3	429.9

The value of g at Baltimore, latitude 39° 17', is 980.05 centimetres therefore, reducing to 45° of latitude, and at the sea level, the value of the mechanical equivalent of heat is

$$J = 426.9.$$

To reduce to the English system, multiply by $\frac{1}{3}$, and by the length of the metre in feet, so that

$$J = 778.$$

Total Heat.—This term is defined as the heat required to raise a unit of weight of water from freezing point to a given temperature, and to entirely evaporate it at that temperature. The experiments made by Regnault were in the reverse order; that is, steam was led from a boiler into the calorimeter, and there condensed. Knowing the initial and final weights of the calorimeter, the temperature of the steam, and the initial and final temperatures of the water in the calorimeter, he was able, after applying the necessary corrections, to calculate the total heats for the several experiments.

As a conclusion of the work, he gives the following values for the total heats:—

10°	610	By equation, 609.6
63°	625	625.2
100°	637	
195°	666	

Assuming an equation of the form

$$\lambda = A + Bt,$$

Regnault calculated the constants from the values given for 100° and 195° , and gives the equation

$$\lambda = 606.5 + 0.305t.$$

Wishing to see the effect of the varying value of the specific heat at low temperatures, I recalculated the total heats given by experiment, by a method resembling that used in recalculation of the heats of the liquid, and plotted the results together with Regnault's values uncorrected. The recalculated points were a little more regular than the original ones, and lay nearer the line represented by the above equation. Especially did the recalculated points for those experiments, for which the true mean specific heat of the water in the calorimeter was nearly unity, lie near that line. It therefore appears that the equation represents our best knowledge of the total heat of steam.

For the Fahrenheit scale the equation becomes

$$\lambda = 1091.7 + 0.305(t - 32).$$

Heat of Vaporization.—If the heat of the liquid be subtracted from the total heat, the remainder is called the heat of vaporization, and is represented by r , so that

$$r = \lambda - q.$$

Internal and External Latent Heat.—The heat of vaporization overcomes external pressure, and changes the state from liquid to vapor at constant temperature and pressure. Let the specific volume of the saturated vapor be s , and that of the liquid be σ , then the change of volume is $s - \sigma = u$, on passing from the liquid to the vaporous state. The external work is

$$p(s - \sigma) = pu,$$

and the corresponding amount of heat, or the external latent heat, is

$$Ap(s - \sigma) = Apu,$$

A being the reciprocal of the mechanical equivalent of heat.

The heat required to do the disgregation work, or the internal latent heat, is

$$\rho = r - Apu.$$

Specific Volume and Density of Steam.—On account of the great difficulty of direct determination of the weight of saturated steam, it is customary to calculate the specific volume of steam by aid of the following equation, derived by the application of the principles of thermo-dynamics to the general equation representing the properties of saturated vapor:—

$$s = \frac{r}{AT} \cdot \frac{1}{\frac{dp}{dt}} + \sigma,$$

In which A is the reciprocal of the mechanical equivalent of heat, T is the temperature from the absolute zero, and σ is the volume of one unit of weight of the liquid from which the vapor is formed. The differential co-efficient $\frac{dp}{dt}$ can be calculated by aid of the equations on page 11.

The absolute temperature is obtained by adding 273.7 to the temperature in degrees Centigrade, or 460.7 to the temperature in degrees Fahrenheit.

The volumes and densities of saturated steam given in Tables I, II, and III, were calculated by this method.

It is of interest to consider the degree of accuracy that may be expected from this method of calculating the density of saturated vapor. The value of r depends on λ and q ; for the first, Regnault gives three figures in the data from which the empirical equation is deduced, and the experimental work does not indicate a greater degree of accuracy. The fourth figure, if stated, is likely to be in error to the extent of five units. The value of T is commonly stated in four figures, of which the last may be in error by two units. A , as determined by Rowland, has four figures, the last being uncertain to the extent of one or two units. The differential co-efficient $\frac{dp}{dt}$ is deduced from the equations for calculating p ; and those equations are derived from data having five places of significant figures. Now the Equations B and C , for steam at 45° of latitude for the English system give a pressure of 14.6967 pounds on the square inch; but the specific volume calculated by aid of Equation B is 26.550 cubic feet, while Equation C gives 26.637 cubic feet. The mean, 26.60, differs from either extreme by about one in seven hundred. This discrepancy is due to the fact that the curves represented by Equations B and C meet at the common temperature, 212° , but do not have a common tangent. Since the equations are empirical and not logical, the error or uncertainty is unavoidable, and all calculated specific volumes are affected by a similar uncertainty. The greatest probable error is in determining r , for which it may be about one in one thousand. The error introduced into this equation by using the values of A in common use, that is, 772 instead of 778, is about one in one hundred.

Tate and Fairbairn's Experiments.—In 1860 an attempt was made by Tate and Fairbairn to determine the specific volume of steam by direct experiment. The following table, taken from the *Philosophical Transactions*, Vol. cl., gives the results of all their experiments, together with the volumes calculated by their empirical formula,

$$V = 25.62 + \frac{49513}{P + 0.72}.$$

	Pressure in Inches of Mercury. <i>P</i> .	Maximum Temperature, Fahrenheit, of Saturation. <i>T</i> .	Specific Volume from Experiments. <i>V</i> .	Specific Volume from Formula. <i>V</i> .	Error of Formula.
1	5.35	136.77	8275.3	8183	-92
2	8.02	155.33	5333.5	5326	-7
3	9.45	159.36	4920.2	4900	-20
4	12.47	170.92	3722.6	3766	+44
5	12.61	171.48	3715.1	3740	+25
6	13.62	174.92	3438.1	3478	+40
7	16.01	182.30	3051.0	2985	-66
8	18.36	188.30	2623.4	2620	-3
9	22.88	198.78	2149.5	2124	-25
1'	53.61	242.00	943.1	937	-6
2'	55.52	244.82	908.0	906	-2
3'	55.89	245.22	892.5	900	+7
4'	66.84	255.50	759.4	758	-1
5'	76.20	263.14	649.2	669	+20
6'	81.53	267.21	635.3	628	-7
7'	84.20	269.20	605.7	608	+3
8'	92.23	274.76	584.4	562	-22
9'	90.08	273.30	543.2	545	+2
10'	99.00	279.42	515.0	519	+4
11'	104.54	282.58	497.2	496	-1
12'	112.78	287.25	458.3	461	+3
13'	122.25	292.53	433.1	428	-5
14'	114.25	288.25	449.6	456	+7

It is apparent that the errors of this formula are much larger than the probable errors of the thermo-dynamic method.

The following table, giving the volumes in cubic metres of one kilogramme of saturated steam, shows the comparison of the two methods:—

By equation	0° C.	50° C.	100° C.	150° C.	200° C.
$s = \frac{\gamma}{AT} \cdot \frac{dt}{dp} + \sigma$	211.5	12.11	1.660	0.3875	0.1277

From equation

$$V = 25.62 + \frac{49153}{P + 0.72}, \quad 54.97 \quad 11.43 \quad 1.643 \quad 0.3706 \quad 0.1343$$

Steam Entropy.—From the second law of thermo-dynamics may be deduced the equation

$$d\phi = \frac{dQ}{T},$$

in which ϕ is the entropy, dQ is the heat applied or withdrawn, and T is the absolute temperature. Since the entropy depends on the state of the substance only, and not on the method of arriving at that state, we may calculate the increase of entropy in one unit of weight of a given mixture of water and steam, above the entropy of one pound of water at freezing point, in the following method. Suppose that one unit of weight of water is raised from

freezing point to the temperature t , and that the portion x is then changed into steam. During the first operation the change of entropy will be

$$\theta = \int_0^x \frac{dq}{T} = \int_0^x \frac{cdt}{T}.$$

During the second operation the change of entropy will be

$$\frac{xr}{T},$$

since the heat is added at the constant temperature t . The entire change of entropy will be

$$\phi = \frac{xr}{T} + \int_0^x \frac{cdt}{T} = \frac{xr}{T} + \theta.$$

At any other state the entropy of a unit of weight of a mixture of steam and water will be

$$\phi_1 = \frac{x_1 r_1}{T_1} + \theta_1,$$

and the change of entropy will be

$$\phi - \phi_1 = \frac{xr}{T} + \theta - \frac{x_1 r_1}{T_1} - \theta_1.$$

During an adiabatic change no heat is transmitted, and the entropy is constant.

$$\frac{xr}{T} + \theta = \frac{x_1 r_1}{T_1} + \theta_1.$$

When the initial state including the value of x is known, and also the final temperature or pressure, the final value of x_1 may be calculated by the above equation; and the initial and final volumes may be found by the equations

$$v = xu + \sigma, \quad v_1 = x_1 u_1 + \sigma;$$

the value of u for a given temperature or pressure, from the equation,

$$s = u + \sigma.$$

Entropy of the Liquid.—When the specific heat of a liquid is known in terms of the temperature, the entropy of the liquid,

$$\theta = \int_0^x \frac{cdt}{T},$$

is readily calculated. For water we have, for example, the entropy of the liquid at 13°C .

$$1.0072 \log_e \frac{T_3}{T_0} + 1.0044 \log_e \frac{T_{10}}{T_3} + 1.0016 \log_e \frac{T_{10}}{T_{10}}.$$

For other liquids having the general formula for the heat of the liquid,

$$q = at + bt^2 + ct^3,$$

the entropy is

$$\theta = \int_0^x \frac{(a + 2bt + 3ct^2) dt}{T}.$$

Other Vapors. — Tables IV to IX are taken from Zeuner's *Mechanischen Wärmetheorie*. His values for the specific volume and density were calculated with 273 for the absolute temperature of 0° C., and with 424 for the mechanical equivalent of heat. To bring these tables into accord with Tables I, II, and III, the values of the specific volume and density have been modified by using 273.7 for the absolute temperature of 0° C., and 426.7 for the mechanical equivalent of heat at Paris.

The equations by which the tables were calculated, taken from Regnault's memoirs, *Académie des Sciences, Comptes rendus, Tome XXXVI*, are here assembled, together with Zeuner's equations for the differential co-efficient,

$$\frac{1}{p} \frac{dp}{dt}$$

TEMPERATURE AND PRESSURE.

1	log p 2	a 3	b 4	c 5
Alcohol	$a - ba^n + c\beta^n$	5.4562028	4.9809960	0.0485307
Ether	$a + ba^n - c\beta^n$	5.0286208	0.0002284	3.1906390
Chloroform	$a - ba^n - c\beta^n$	5.2253893	2.9531281	0.0668673
Carbon bisulphide .	$a - ba^n - c\beta^n$	5.4011662	3.4405663	0.2857386
Carbon tetrachloride	$a - ba^n - c\beta^n$	12.0962331	9.1875180	1.9674890

TEMPERATURE AND PRESSURE — *Concluded.*

	log a. 6	log β . 7	n 8	Limits. 9
Alcohol	1.99708557	1.9409485	t+20	$-20^{\circ}, +150^{\circ}$ C.
Ether	0.0145775	1.996877	t+20	$-20^{\circ}, +120^{\circ}$
Chloroform	1.9974144	1.9868176	t-20	$+20^{\circ}, +164^{\circ}$
Carbon bisulphide .	1.9977628	1.9911997	t+20	$-20^{\circ}, +140^{\circ}$
Carbon tetrachloride	1.9997120	1.9949780	t+20	$-20^{\circ}, +188^{\circ}$

The equation for the temperature and pressure of the saturated vapor of acetone, as recalculated by Zeuner, is, —

$$\log p = a - ba^n + c\beta^n.$$

$$a = 5.3085419.$$

$$\log ba^n = + 0.5312766 - 0.0026148t.$$

$$\log c\beta^n = - 0.9645222 - 0.0215592t.$$

$$\frac{1}{p} \frac{dp}{dt} = A\alpha + B\beta$$

From Zeuner's *Wärmetheorie*.

	Sign.		Log ($A\alpha$)	Log ($B\beta$)
	$A\alpha$	$B\beta$		
Alcohol	+	-	-1.1720041-0.0029143 <i>t</i>	-2.9992701-0.0590515 <i>t</i>
Ether	+	+	-1.3396024-0.0011223 <i>t</i>	-4.4616396+0.0145775 <i>t</i>
Chloroform	+	+	-1.3410130-0.0025850 <i>t</i>	-2.0067124-0.0131824 <i>t</i>
Carbon bisulphide	+	+	-1.4330778-0.0022372 <i>t</i>	-2.0511078-0.0088903 <i>t</i>
Carbon tetrachloride, ...	+	+	-1.8011078-0.0002880 <i>t</i>	-1.5812195-0.0050220 <i>t</i>
Aceton	+	+	-1.3206535-0.0026148 <i>t</i>	-1.9064582-0.0215592 <i>t</i>

t, temperature C.

HEAT OF THE LIQUID.

Alcohol	$q = 0.54754t + 0.0011218t^2 + 0.000002206t^3$
Ether	$q = 0.52901t + 0.0002959t^2$
Chloroform	$q = 0.23235t + 0.0000507t^2$
Carbon bisulphide	$q = 0.23523t + 0.0000815t^2$
Carbon tetrachloride	$q = 0.19798t + 0.0000906t^2$
Aceton	$q = 0.50643t + 0.0003965t^2$

TOTAL HEAT.

Ether	$\lambda = 94 + 0.45t - 0.00055556t^2$
Chloroform	$\lambda = 67 + 0.1375t$
Carbon bisulphide	$\lambda = 96 - 0.14601t - 0.0004123t^2$
Carbon tetrachloride	$\lambda = 52 + 0.14625t - 0.000172t^2$
Aceton	$\lambda = 140.5 + 0.36644t - 0.000516t^2$

The total heat of alcohol varies in so irregular a manner that no equation can be given for it.

Zeuner gives the following empirical equations for calculating the heat equivalent of the internal work, which are proposed to lessen the labor of calculation.

HEAT EQUIVALENT OF INTERNAL WORK.

Water	$p = 575.40 - 0.791t$
Ether	$p = 86.54 - 0.10648t - 0.0007160t^2$
Chloroform	$p = 62.44 - 0.11282t - 0.0000140t^2$
Carbon bisulphide	$p = 82.79 - 0.11446t - 0.0004020t^2$
Carbon tetrachloride	$p = 48.57 - 0.06844t - 0.0002080t^2$
Aceton	$p = 131.63 - 0.20184t - 0.0006280t^2$

Sulphur Dioxide and Ammonia.—The use of ice-machines has brought into prominence liquids which vaporize at low temperatures. For two such liquids, sulphur dioxide and ammonia, Regnault gives the following equations for temperature and pressure:—

SULPHUR DIOXIDE.

$$\log p = a - ba^n - c\beta^n$$

$$a = 5.6663790$$

$$b = 3.0146890$$

$$c = 0.1465400$$

$$\log a = \bar{1}.9972989$$

$$\log \beta = \bar{1}.9872900$$

$$n = t + 28$$

$$\text{Limits, } -28, +62.$$

AMMONIA.

$$\log p = a - ba^n - c\beta^n$$

$$a = 11.5043330$$

$$b = 7.4503520$$

$$c = 0.9499674$$

$$\log a = \bar{1}.9996014$$

$$\log \beta = \bar{1}.9939729$$

$$n = t + 22$$

$$\text{Limits, } -22, +82.$$

Unfortunately the heat of the liquid and the total heat for these substances have not been determined. We have, however, some of the properties of these substances in the gaseous state or more properly in the state of superheated vapors.

Now, it has been shown by Zeuner that superheated steam may have its properties represented by the equation

$$pv = BT - Cp^a,$$

in which p is the pressure in pounds on the square foot or kilograms on the square meter, v is the volume of a pound in cubic feet or of a kilogram in cubic meters, and T is the absolute temperature. The constants have the following values when calculated from the properties of saturated steam:

$$\text{French units, } . . . . B = 51.3 \quad C = 198 \quad a = \frac{1}{4}.$$

$$\text{English units, } . . . . B = 93.5 \quad C = 971 \quad a = \frac{1}{4}.$$

It was first proposed by Ledoux to find similar equations to represent the properties of superheated sulphur dioxide and ammonia, and to use such equations for calculating approximate tables of the properties of these vapors when saturated, just as the tables of the properties of saturated steam had been used in establishing the equation for superheated steam.

In the *Thermodynamics of the Steam-engine* by the author, pages 452 to 459, this calculation has been carried out with the best ascertained properties of the superheated vapors of sulphur dioxide and ammonia with the following results:

SULPHUR DIOXIDE.

$$\text{French units, } pv = 14.5 \quad T - 48p^{0.22}$$

$$\text{English units, } pv = 26.4 \quad T - 184p^{0.22}$$

AMMONIA.

$$pv = 54.3 \quad T - 142p^{\frac{1}{4}}$$

$$pv = 99 \quad T - 710p^{\frac{1}{4}}$$

The application of these equations to the vapors when saturated gives the following results:

HEAT OF VAPORIZATION.

SULPHUR DIOXIDE.

AMMONIA.

French units, $r = 98 - 0.27t$ $r = 300 - 0.8t$ English units, $r = 176 - 0.27(t - 32)$ $r = 540 - 0.8(t - 32)$

SPECIFIC HEAT OF THE LIQUID.

SULPHUR DIOXIDE.

AMMONIA.

 $c = 0.4$ $c = 1.1$

Tables X and XI were calculated by aid of the equations written, and may be of use for approximate calculations, in default of more reliable tables.

Specific Volume of Liquids.—Table XII was taken from the *Phys.-Chem. Tabellen* of Landolt and Börnstein.

Volume of Water.—Table XIII gives the volumes of water compared with its volume at 4° . From 0° to 100° C., the values are those given by Rossetti. Above 100° , the values are those calculated by the equations given by Hirn in the *Annales de Chimie et de Physique*, 1867.

Volumes of Liquids.—The volumes of liquids at high temperatures, compared with the volume at freezing point, are represented by the following equations given by Hirn in the *Annales*:—

		Logs.
Water 100° C. to 200° C. (vol. at 4° C.= unity)	$v = 1 + 0.00010867875t$	6.0361445-10
	$+ 0.0000030073653t^2$	4.4781862-10
	$+ 0.0000000028730422t^3$	1.4583419-10
	$- 0.000000000066457031t^4$	8.8225409-20
Alcohol 30° C. to 160° C. (vol. at 0° C.= unity)	$v = 1 + 0.00073892265t$	6.8685091-10
	$+ 0.00001055235t^2$	3.0233492-10
	$- 0.000000002480842t^3$	2.9600517-10
	$+ 0.00000000040413567t^4$	0.6065278-10
Ether 30° C. to 130° C. (vol. at 0° C.= unity)	$v = 1 + 0.0013489059t$	7.1299817-10
	$+ 0.0000005537t^2$	4.8164899-10
	$- 0.000000034490759t^3$	2.5377028-10
	$+ 0.0000000003772062t^4$	0.5285571-10
Carbon bisulphide 30° to 160° C. (vol. at 0° C.=unity)	$v = 1 + 0.0011680559t$	7.0674630-10
	$+ 0.0000016489598t^2$	4.2172103-10
	$- 0.0000000081119062t^3$	0.9091229-10
	$+ 0.000000000060646589t^4$	1.7849494-20
Carbon tetrachloride 30° to 160° C. (vol. at 0° C.=unity)	$v = 1 + 0.0010671883t$	7.0282409-10
	$+ 0.0000005631378t^2$	4.5520763-10
	$- 0.000000014949281t^3$	2.1746202-10
	$+ 0.00000000085182318t^4$	9.9303494-20

Other Data. — For convenience the following data are assembled: —

Length of the metre in inches	{ 39.3702 (Rogers)
	{ 39.370432 (Clarke)
Weight of the kilogramme in pounds	2.20462125
Weight of 1 litre (1 cu. decimetre) of mercury	13.5959 kilos.
One horse power, in foot pounds per second	550
<i>Cheval à vapeur</i> , in kilogrammetres per second	75
	{ 760 mm. of mercury.
Normal pressure of the atmosphere	{ 10,333 kilos per sq. m.
	{ 14.6967 lbs. per sq. in.
	{ 2116.32 lbs. per. sq. ft
Absolute temperature of freezing point	{ 273.°7 C.
	{ 492.°7 F.

Explanation of the Tables. — In Table I, the first column gives the temperature, t , of saturated steam.

The second column gives the corresponding pressure, p , in pounds on the square inch, above an absolute vacuum; the differences are placed between the two numbers from which they are derived. For example, the pressure at 40° F. is 0.1216 pounds per square inch; and the difference to be used in interpolation, and placed half a line lower, is 48.

The third column gives the heat of the liquid, q , required to raise the temperature of one pound of water from 32° F. to a given temperature.

The fourth column gives the total heat, λ , required to raise one pound of water from 32° F. to a given temperature, and to entirely vaporize it under the pressure due to that temperature.

The fifth column gives the heat of vaporization, or the heat required to vaporize one pound of water at a given temperature, under the pressure corresponding.

The sixth column gives the heat required to do the disgregation work during the vaporization of one pound of water.

The seventh column gives the heat required to overcome the external pressure, and do the work of increasing the volume from σ to s .

The eighth column gives the entropy of the liquid.

The ninth and tenth columns give the specific volume, or volume in cubic feet, of one pound of saturated steam, and the density or weight of one cubic foot in pounds.

Table II differs from Table I in that it is arranged to give the properties of saturated steam for each pound of pressure.

Table III gives the properties of saturated steam in French units; and Tables IV to XI give the properties of other saturated vapors in the same units. It is to be noted that the pressures in Tables IV to IX are in millimetres of mercury; in Tables X and XI, are in kilogrammes per square metre.

TABLE I.

SATURATED STEAM.

ENGLISH UNITS.

Temperature, Degrees Fahr.	Pressure, Pounds per square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density, in Pounds of Water per Cubic Foot.	Temperature, Degrees Fahr.
32	0.0800	0	1001.7	1001.7	1005.9	55.8	0.0000	2307	0.0002022	32
33	0.0926	36	1002.0	1001.0	1005.1	55.9	0.0020	2250	0.0003067	33
34	0.0961	37						122		
35	0.1002	39	1002.3	1000.3	1004.3	56.0	0.0041	2128	0.0003187	34
36	0.1042	40	1002.6	1000.6	1003.6	56.0	0.0061	2022	0.0003269	35
		41	1002.9	1000.9	1002.8	56.1	0.0081	2010	0.0003420	36
37	0.1083	43	1003.2	1000.2	1002.0	56.2	0.0101	2001	0.0003568	37
38	0.1126	44	1003.5	1000.5	1001.3	56.2	0.0122	2000	0.0003704	38
39	0.1170	46	1003.8	1000.7	1000.4	56.3	0.0142	2001	0.0003845	39
40	0.1216	48	1004.1	1000.0	1000.6	56.4	0.0162	2006	0.0003990	40
41	0.1264	49	1004.4	1005.3	1008.8	56.5	0.0182	2415	0.0004141	41
42	0.1313	51	1004.8	1004.7	1008.1	56.6	0.0202	2228	0.0004296	42
43	0.1364	53	1005.1	1004.0	1007.3	56.7	0.0222	2244	0.0004450	43
44	0.1417	54	1005.4	1003.3	1006.5	56.8	0.0242	2104	0.0004621	44
45	0.1471	57	1005.7	1002.6	1005.8	56.8	0.0262	2087	0.0004792	45
46	0.1528	58	1006.0	1001.9	1005.0	56.9	0.0282	2013	0.0004968	46
47	0.1586	60	1006.3	1001.2	1004.2	57.0	0.0302	1942	0.0005149	47
48	0.1646	62	1006.6	1000.5	1003.4	57.1	0.0322	1874	0.0005326	48
49	0.1708	65	1006.9	1000.8	1002.6	57.2	0.0341	1808	0.0005500	49
50	0.1773	66	1007.2	1000.1	1001.8	57.3	0.0361	1745	0.0005673	50
51	0.1839	69	1007.5	1008.4	1021.1	57.3	0.0381	1685	0.0005837	51
52	0.1908	71	1007.8	1007.7	1020.3	57.4	0.0400	1626	0.0006002	52
53	0.1979	73	1008.1	1007.0	1019.5	57.5	0.0420	1570	0.0006169	53
54	0.2052	76	1008.4	1006.3	1018.7	57.6	0.0439	1516	0.0006335	54
55	0.2128	78	1008.7	1005.6	1017.9	57.7	0.0459	1465	0.0006502	55
56	0.2206	81	1009.0	1004.9	1017.1	57.8	0.0478	1415	0.0006669	56
57	0.2287	83	1009.3	1004.2	1016.3	57.9	0.0497	1367	0.0006837	57
58	0.2370	86	1009.6	1003.5	1015.6	57.9	0.0517	1321	0.0007007	58
59	0.2456	90	1009.9	1002.8	1014.8	58.0	0.0536	1276	0.0007178	59
60	0.2545	92	1100.2	1002.1	1014.0	58.1	0.0555	1234	0.0007351	60
61	0.2637	94	1100.5	1001.4	1013.2	58.2	0.0574	1193	0.0007524	61
62	0.2731	98	1100.9	1000.8	1012.5	58.3	0.0594	1153	0.0007698	62
63	0.2829	100	1101.2	1000.1	1011.7	58.4	0.0613	1115	0.0007873	63

SATURATED STEAM — Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.	Temperature, Degrees Fahr.
									Weight, in Pounds, of one Cubic Foot.	
64	0.2929 ₁₀₄	32.12	1101.5	1069.4	1010.9	58.5	0.0632	1078.3 ₆	0.0009273 ₃₁₃	64
65	0.3033 ₁₀₇	33.12	1101.8	1068.7	1010.1	58.6	0.0651	1042.3 ₅	0.0009586 ₃₂₅	65
66	0.3140 ₁₁₀	34.12	1102.1	1068.0	1009.4	58.6	0.0670	1009.3 ₅	0.0009911 ₃₂₉	66
67	0.3250 ₁₁₄	35.12	1102.4	1067.3	1008.6	58.7	0.0689	976.3 ₃₁₆	0.001024 ₃₅	67
68	0.3364 ₁₁₇	36.12	1102.7	1066.6	1007.8	58.8	0.0708	944.3 ₂₀₄	0.001059 ₃₅	68
69	0.3481 ₁₂₁	37.12	1103.0	1065.9	1007.0	58.9	0.0727	914.3 ₂₀₃	0.001094 ₃₆	69
70	0.3602 ₁₂₄	38.11	1103.3	1065.2	1006.2	59.0	0.0745	885.0 ₂₈₃	0.001130 ₃₇	70
71	0.3726 ₁₂₈	39.11	1103.6	1064.5	1005.4	59.1	0.0764	856.7 ₂₇₂	0.001167 ₃₈	71
72	0.3854 ₁₃₂	40.11	1103.9	1063.8	1004.6	59.2	0.0783	829.5 ₂₆₃	0.001205 ₄₀	72
73	0.3986 ₁₃₆	41.11	1104.2	1063.1	1003.8	59.3	0.0802	803.2 ₂₅₃	0.001245 ₄₁	73
74	0.4122 ₁₄₀	42.11	1104.5	1062.4	1003.0	59.4	0.0820	777.9 ₂₄₄	0.001286 ₄₁	74
75	0.4262 ₁₄₄	43.11	1104.8	1061.7	1002.3	59.4	0.0839	753.5 ₂₃₆	0.001327 ₄₃	75
76	0.4406 ₁₄₉	44.11	1105.1	1061.0	1001.5	59.5	0.0858	729.9 ₂₂₈	0.001370 ₄₄	76
77	0.4555 ₁₅₃	45.10	1105.4	1060.3	1000.7	59.6	0.0876	707.1 ₂₁₉	0.001414 ₄₅	77
78	0.4708 ₁₅₇	46.10	1105.7	1059.6	999.9	59.7	0.0895	685.2 ₂₁₁	0.001459 ₄₆	78
79	0.4865 ₁₆₂	47.09	1106.0	1058.9	999.1	59.8	0.0913	664.1 ₂₀₃	0.001505 ₄₈	79
80	0.5027 ₁₆₇	48.09	1106.3	1058.2	998.3	59.9	0.0932	643.8 ₁₉₇	0.001553 ₄₉	80
81	0.5194 ₁₇₁	49.08	1106.6	1057.5	997.5	60.0	0.0950	624.1 ₁₉₁	0.001602 ₅₁	81
82	0.5363 ₁₇₇	50.08	1107.0	1056.9	996.8	60.1	0.0968	605.0 ₁₈₄	0.001653 ₅₂	82
83	0.5542 ₁₈₁	51.07	1107.3	1056.2	996.0	60.2	0.0987	586.6 ₁₇₈	0.001705 ₅₃	83
84	0.5723 ₁₈₇	52.07	1107.6	1055.5	995.2	60.3	0.1005	568.8 ₁₇₁	0.001758 ₅₅	84
85	0.5910 ₁₉₂	53.06	1107.9	1054.8	994.4	60.4	0.1023	551.7 ₁₆₅	0.001813 ₅₆	85
86	0.6102 ₁₉₇	54.06	1108.2	1054.1	993.7	60.4	0.1041	535.2 ₁₆₀	0.001869 ₅₇	86
87	0.6299 ₂₀₃	55.05	1108.5	1053.4	992.9	60.5	0.1060	519.2 ₁₅₅	0.001926 ₅₉	87
88	0.6502 ₂₀₉	56.05	1108.8	1052.7	992.1	60.6	0.1078	503.7 ₁₄₈	0.001985 ₆₀	88
89	0.6711 ₂₁₄	57.04	1109.1	1052.1	991.4	60.7	0.1096	488.9 ₁₄₃	0.002045 ₆₂	89
90	0.6925 ₂₂₁	58.04	1109.4	1051.4	990.6	60.8	0.1114	474.6 ₁₃₉	0.002107 ₆₄	90
91	0.7146 ₂₂₆	59.03	1109.7	1050.7	989.8	60.9	0.1132	460.7 ₁₃₆	0.002171 ₆₆	91
92	0.7372 ₂₃₃	60.03	1110.0	1050.0	989.0	61.0	0.1150	447.1 ₁₃₁	0.002237 ₆₇	92
93	0.7603 ₂₃₉	61.03	1110.3	1049.3	988.2	61.1	0.1168	434.0 ₁₂₅	0.002304 ₆₈	93
94	0.7844 ₂₄₆	62.02	1110.6	1048.6	987.4	61.2	0.1186	421.5 ₁₂₂	0.002372 ₇₁	94
95	0.8090 ₂₅₂	63.02	1110.9	1047.9	986.6	61.3	0.1204	409.3 ₁₁₈	0.002443 ₇₃	95
96	0.8342 ₂₅₉	64.01	1111.2	1047.2	985.8	61.4	0.1222	397.5 ₁₁₄	0.002516 ₇₄	96
97	0.8601 ₂₆₆	65.01	1111.5	1046.5	985.0	61.5	0.1240	386.1 ₁₁₀	0.002590 ₇₆	97
98	0.8867 ₂₇₃	66.01	1111.8	1045.8	984.2	61.6	0.1258	375.1 ₁₀₇	0.002666 ₇₈	98
99	0.9140 ₂₈₁	67.01	1112.1	1045.1	983.4	61.7	0.1275	364.4 ₁₀₄	0.002744 ₈₀	99
100	0.9421 ₂₈₈	68.01	1112.4	1044.4	982.7	61.7	0.1293	354.0 ₉₉	0.002824 ₈₂	100
101	0.9709 ₂₉₅	69.01	1112.7	1043.7	981.9	61.8	0.1311	344.1 ₉₆	0.002906 ₈₄	101
102	1.0004 ₃₀₃	70.00	1113.1	1043.1	981.2	61.9	0.1329	334.5 ₉₃	0.002990 ₈₅	102
103	1.0307 ₃₁₂	71.00	1113.4	1042.4	980.4	62.0	0.1347	325.2 ₉₁	0.003075 ₈₈	103

SATURATED STEAM—Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Latent Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY. Weight, in Pounds, of one Cubic Foot.	Temperature, Degrees Fahr.
°	p	q	A	r	p	Apu	$\int_{\frac{1}{T}} dT$	v	γ	°
104	1.0610	72.0	1113.7	1041.7	979.6	62.1	0.1364	316.1 ₈₃	0.003163 ₉₁	104
105	1.0608	73.0	1114.0	1041.0	978.8	62.2	0.1362	307.5 ₈₃	0.003234 ₉₁	105
106	1.1206	74.0	1114.3	1040.3	978.0	62.3	0.1460	298.8 ₈₂	0.003347 ₉₄	106
107	1.1602	75.0	1114.6	1039.6	977.2	62.4	0.1417	290.6 ₇₉	0.003441 ₉₆	107
108	1.1947	76.0	1114.9	1038.9	976.4	62.5	0.1435	282.7 ₇₉	0.003537 ₉₉	108
109	1.2301	77.0	1115.2	1038.2	975.6	62.6	0.1452	275.0 ₇₅	0.003636 ₁₀₂	109
110	1.2603	78.0	1115.5	1037.5	974.8	62.7	0.1470	267.5 ₇₂	0.003738 ₁₀₄	110
111	1.3005	79.0	1115.8	1036.8	974.0	62.8	0.1487	260.3 ₇₀	0.003842 ₁₀₆	111
112	1.3416	80.0	1116.1	1036.1	973.2	62.9	0.1505	253.3 ₆₈	0.003948 ₁₀₉	112
113	1.3807	81.0	1116.4	1035.4	972.4	63.0	0.1522	246.6 ₆₆	0.004057 ₁₁₁	113
114	1.4207	82.0	1116.7	1034.7	971.6	63.1	0.1540	239.9 ₆₄	0.004168 ₁₁₅	114
115	1.4618	83.0	1117.0	1034.0	970.8	63.2	0.1558	233.5 ₆₂	0.004281 ₁₁₆	115
116	1.5030	84.0	1117.3	1033.3	970.0	63.3	0.1575	227.3 ₆₀	0.004399 ₁₂₀	116
117	1.5470	85.0	1117.6	1032.6	969.2	63.4	0.1592	221.3 ₅₈	0.004519 ₁₂₁	117
118	1.5912	86.0	1117.9	1031.9	968.4	63.5	0.1610	215.3 ₅₆	0.004640 ₁₂₄	118
119	1.6364	87.0	1118.2	1031.2	967.6	63.6	0.1627	209.9 ₅₅	0.004764 ₁₂₈	119
120	1.6828	88.1	1118.5	1030.4	966.7	63.7	0.1645	204.4 ₅₃	0.004892 ₁₃₀	120
121	1.7302	89.1	1118.8	1029.7	966.0	63.7	0.1662	199.1 ₅₂	0.005022 ₁₃₄	121
122	1.7780	90.1	1119.2	1029.1	965.3	63.8	0.1679	193.9 ₅₀	0.005156 ₁₃₇	122
123	1.8267	91.1	1119.5	1028.4	964.5	63.9	0.1697	188.9 ₄₈	0.005293 ₁₃₉	123
124	1.8767	92.1	1119.8	1027.7	963.7	64.0	0.1714	184.1 ₄₇	0.005432 ₁₄₂	124
125	1.9278	93.1	1120.1	1027.0	962.9	64.1	0.1731	179.4 ₄₆	0.005574 ₁₄₆	125
126	1.9802	94.1	1120.4	1026.3	962.1	64.2	0.1748	174.8 ₄₄	0.005720 ₁₄₈	126
127	2.0330	95.1	1120.7	1025.6	961.3	64.3	0.1765	170.4 ₄₃	0.005868 ₁₅₂	127
128	2.0869	96.1	1121.0	1024.9	960.5	64.4	0.1783	166.1 ₄₂	0.006020 ₁₅₆	128
129	2.1523	97.1	1121.3	1024.2	959.7	64.5	0.1800	161.9 ₄₁	0.006176 ₁₆₀	129
130	2.2199	98.1	1121.6	1023.5	958.9	64.6	0.1817	157.8 ₃₉	0.006336 ₁₆₂	130
131	2.2719	99.1	1121.9	1022.8	958.1	64.7	0.1834	153.9 ₃₈	0.006498 ₁₆₆	131
132	2.3263	100.2	1122.2	1022.0	957.2	64.8	0.1851	150.1 ₃₇	0.006664 ₁₆₉	132
133	2.3801	101.2	1122.5	1021.3	956.4	64.9	0.1868	146.4 ₃₆	0.006833 ₁₇₂	133
134	2.4363	102.2	1122.8	1020.6	955.6	65.0	0.1885	142.8 ₃₆	0.007005 ₁₇₆	134
135	2.5061	103.2	1123.1	1019.9	954.8	65.1	0.1902	139.2 ₃₄	0.007181 ₁₈₀	135
136	2.5932	104.2	1123.4	1019.2	954.0	65.2	0.1919	135.8 ₃₃	0.007361 ₁₈₄	136
137	2.6619	105.2	1123.7	1018.5	953.2	65.3	0.1936	132.5 ₃₂	0.007545 ₁₈₇	137
138	2.7321	106.2	1124.0	1017.8	952.4	65.4	0.1952	129.3 ₃₁	0.007732 ₁₉₂	138
139	2.8040	107.2	1124.3	1017.1	951.6	65.5	0.1969	126.2 ₃₀	0.007924 ₁₉₆	139
140	2.8774	108.2	1124.6	1016.4	950.8	65.6	0.1986	123.2 ₃₀	0.008120 ₁₉₈	140
141	2.9525	109.2	1124.9	1015.7	950.0	65.7	0.2003	120.2 ₂₉	0.008318 ₂₀₄	141
142	3.0292	110.2	1125.3	1015.1	949.3	65.8	0.2020	117.3 ₂₈	0.008522 ₂₀₈	142
143	3.1076	111.2	1125.6	1014.4	948.5	65.9	0.2036	114.5 ₂₇	0.008730 ₂₁₂	143

SATURATED STEAM—Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY.	Temperature, Degrees Fahr.
									Weight, in Pounds, of one Cubic Foot.	
144	3.1877 ⁸¹⁹	112.2	1125.9	1013.7	947.7	66.0	0.2053	111.8 ²⁶	0.008942 ²¹⁷	144
145	3.2696 ⁸³⁶	113.3	1126.2	1012.9	946.8	66.1	0.2070	109.9 ²⁶	0.009159 ²²⁰	145
146	3.3532 ⁸⁵⁵	114.3	1126.5	1012.2	946.0	66.2	0.2086	106.6 ²⁵	0.009379 ²²⁵	146
147	3.4387 ⁸⁷³	115.3	1126.8	1011.5	945.2	66.3	0.2103	104.1 ²⁴	0.009604 ²²⁹	147
148	3.5260 ⁸⁹²	116.3	1127.1	1010.8	944.4	66.4	0.2119	101.7 ²⁴	0.009833 ²³⁷	148
149	3.6152 ⁹¹¹	117.3	1127.4	1010.1	943.6	66.5	0.2136	99.33 ²³⁰	0.01007 ²⁴	149
150	3.7063 ⁹³⁰	118.3	1127.7	1009.4	942.8	66.6	0.2152	97.03 ²²⁴	0.01031 ²⁴	150
151	3.7993 ⁹⁵⁰	119.3	1128.0	1008.7	942.0	66.7	0.2169	94.79 ²¹⁸	0.01055 ²⁵	151
152	3.8943 ⁹⁷⁰	120.3	1128.3	1008.0	941.3	66.7	0.2185	92.61 ²¹²	0.01080 ²⁵	152
153	3.9913 ⁹⁹⁰	121.3	1128.6	1007.3	940.5	66.8	0.2202	90.49 ²¹²	0.01106 ²⁵	153
154	4.0903 ¹⁰¹¹	122.3	1128.9	1006.6	939.7	66.9	0.2218	88.43 ²⁰¹	0.01131 ²⁶	154
155	4.1914 ¹⁰³²	123.3	1129.2	1005.9	938.9	67.0	0.2235	86.42 ¹⁹⁵	0.01157 ²⁷	155
156	4.2946 ¹⁰⁵⁴	124.3	1129.5	1005.2	938.1	67.1	0.2251	84.47 ¹⁹¹	0.01184 ²⁷	156
157	4.4000 ¹⁰⁷⁵	125.4	1129.8	1004.4	937.2	67.2	0.2267	82.56 ¹⁸⁶	0.01211 ²⁸	157
158	4.5075 ¹⁰⁹⁷	126.4	1130.1	1003.7	936.4	67.3	0.2284	80.70 ¹⁸⁰	0.01239 ²⁸	158
159	4.6172 ¹¹²⁰	127.4	1130.4	1003.0	935.6	67.4	0.2300	78.90 ¹⁷⁶	0.01267 ²⁹	159
160	4.7292 ¹¹⁴³	128.4	1130.7	1002.3	934.8	67.5	0.2316	77.14 ¹⁷¹	0.01296 ³⁰	160
161	4.8435 ¹¹⁶⁶	129.4	1131.0	1001.6	934.0	67.6	0.2332	75.43 ¹⁶⁶	0.01326 ³⁰	161
162	4.9601 ¹¹⁸⁹	130.4	1131.4	1001.0	933.3	67.7	0.2349	73.77 ¹⁶³	0.01356 ³⁰	162
163	5.079 ¹²¹	131.4	1131.7	1000.3	932.5	67.8	0.2365	72.14 ¹⁵⁸	0.01386 ³¹	163
164	5.200 ¹²⁴	132.4	1132.0	999.6	931.7	67.9	0.2381	70.56 ¹⁵⁵	0.01417 ³²	164
165	5.324 ¹²⁶	133.4	1132.3	998.9	930.9	68.0	0.2397	69.01 ¹⁵⁰	0.01449 ³²	165
166	5.450 ¹²⁹	134.4	1132.6	998.2	930.1	68.1	0.2413	67.51 ¹⁴⁶	0.01481 ³³	166
167	5.579 ¹³¹	135.4	1132.9	997.5	929.3	68.2	0.2429	66.05 ¹⁴³	0.01514 ³⁴	167
168	5.710 ¹³⁴	136.4	1133.2	996.8	928.5	68.3	0.2445	64.62 ¹⁴⁰	0.01548 ³⁴	168
169	5.844 ¹³⁷	137.4	1133.5	996.1	927.7	68.4	0.2461	63.22 ¹³⁷	0.01582 ³⁵	169
170	5.981 ¹³⁹	138.5	1133.8	995.3	926.8	68.5	0.2477	61.85 ¹³²	0.01617 ³⁵	170
171	6.120 ¹⁴²	139.5	1134.1	994.6	926.0	68.6	0.2493	60.53 ¹²⁸	0.01652 ³⁶	171
172	6.262 ¹⁴⁵	140.5	1134.4	993.9	925.2	68.7	0.2509	59.25 ¹²⁶	0.01688 ³⁶	172
173	6.407 ¹⁴⁷	141.5	1134.7	993.2	924.4	68.8	0.2525	57.99 ¹²³	0.01724 ³⁸	173
174	6.554 ¹⁵⁰	142.5	1135.0	992.5	923.7	68.8	0.2541	56.76 ¹²⁰	0.01762 ³⁸	174
175	6.704 ¹⁵⁴	143.5	1135.3	991.8	922.9	68.9	0.2557	55.56 ¹¹⁶	0.01800 ³⁸	175
176	6.858 ¹⁵⁶	144.5	1135.6	991.1	922.1	69.0	0.2573	54.40 ¹¹⁴	0.01838 ⁴⁰	176
177	7.014 ¹⁵⁹	145.5	1135.9	990.4	921.3	69.1	0.2589	53.26 ¹¹²	0.01878 ⁴⁰	177
178	7.173 ¹⁶²	146.5	1136.2	989.7	920.5	69.2	0.2604	52.14 ¹⁰⁸	0.01918 ⁴⁰	178
179	7.335 ¹⁶⁵	147.5	1136.5	989.0	919.7	69.3	0.2620	51.06 ¹⁰⁵	0.01958 ⁴²	179
180	7.500 ¹⁶⁸	148.5	1136.8	988.3	918.9	69.4	0.2636	50.01 ¹⁰³	0.02000 ⁴²	180
181	7.668 ¹⁷²	149.5	1137.1	987.6	918.1	69.5	0.2652	48.98 ¹⁰¹	0.02042 ⁴³	181
182	7.840 ¹⁷⁴	150.6	1137.5	986.9	917.3	69.6	0.2667	47.97 ⁹⁸	0.02085 ⁴³	182
183	8.014 ¹⁷⁸	151.6	1137.8	986.2	916.5	69.7	0.2683	46.99 ⁹⁶	0.02128 ⁴⁴	183

SATURATED STEAM — Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density, Weight, in Pounds, of one Cubic Foot.	Temperature, Degrees Fahr.
184	8.102 ₁₈₁	152.6	1138.1	985.5	915.7	60.8	0.2709	46.00 ₄₄	0.02172 ₄₆	184
185	8.378 ₁₈₅	153.6	1138.4	984.8	914.9	60.9	0.2714	45.00 ₄₂	0.02218 ₄₆	185
186	8.558 ₁₈₈	154.6	1138.7	984.1	914.1	70.0	0.2720	44.17 ₄₀	0.02264 ₄₇	186
187	8.746 ₁₉₁	155.6	1139.0	983.4	913.4	70.0	0.2745	43.28 ₃₇	0.02311 ₄₇	187
188	8.937 ₁₉₅	156.6	1139.3	982.7	912.6	70.1	0.2761	42.41 ₃₅	0.02358 ₄₈	188
189	9.132 ₁₉₈	157.6	1139.6	982.0	901.8	70.2	0.2777	41.56 ₃₃	0.02406 ₄₉	189
190	9.330 ₂₀₂	158.6	1139.9	981.3	911.0	70.3	0.2792	40.73 ₃₁	0.02455 ₅₀	190
191	9.532 ₂₀₆	159.6	1140.2	980.6	910.2	70.4	0.2808	39.92 ₂₉	0.02505 ₅₁	191
192	9.738 ₂₀₉	160.6	1140.5	979.9	909.4	70.5	0.2823	39.13 ₂₇	0.02556 ₅₂	192
193	9.947 ₂₁₃	161.6	1140.8	979.2	908.6	70.6	0.2838	38.35 ₂₅	0.02608 ₅₂	193
194	10.160 ₂₁₇	162.6	1141.1	978.5	907.8	70.7	0.2854	37.59 ₂₄	0.02660 ₅₄	194
195	10.377 ₂₂₁	163.7	1141.4	977.7	906.9	70.8	0.2869	36.85 ₂₂	0.02714 ₅₄	195
196	10.598 ₂₂₄	164.7	1141.7	977.0	906.2	70.8	0.2885	36.13 ₂₁	0.02768 ₅₅	196
197	10.822 ₂₂₉	165.7	1142.0	976.3	905.4	70.9	0.2900	35.42 ₂₀	0.02823 ₅₆	197
198	11.051 ₂₃₂	166.7	1142.3	975.6	904.6	71.0	0.2915	34.73 ₁₉	0.02879 ₅₇	198
199	11.283 ₂₃₇	167.7	1142.6	974.9	903.8	71.1	0.2930	34.06 ₁₈	0.02936 ₅₈	199
200	11.520 ₂₄₁	168.7	1142.9	974.2	903.0	71.2	0.2946	33.40 ₁₆	0.02994 ₅₉	200
201	11.761 ₂₄₄	169.7	1143.2	973.5	902.2	71.3	0.2961	32.76 ₁₅	0.03053 ₆₀	201
202	12.005 ₂₄₉	170.7	1143.6	972.9	901.5	71.4	0.2976	32.13 ₁₄	0.03112 ₆₁	202
203	12.254 ₂₅₄	171.7	1143.9	972.2	900.8	71.4	0.2991	31.52 ₁₃	0.03173 ₆₂	203
204	12.508 ₂₅₇	172.7	1144.2	971.5	900.0	71.5	0.3007	30.92 ₁₂	0.03235 ₆₂	204
205	12.765 ₂₆₃	173.7	1144.5	970.8	899.2	71.6	0.3022	30.33 ₁₁	0.03297 ₆₃	205
206	13.028 ₂₆₆	174.7	1144.8	970.1	898.4	71.7	0.3037	29.75 ₁₀	0.03361 ₆₅	206
207	13.294 ₂₇₁	175.8	1145.1	969.3	897.5	71.8	0.3052	29.19 ₉	0.03426 ₆₇	207
208	13.565 ₂₇₆	176.8	1145.4	968.6	896.7	71.9	0.3067	28.64 ₈	0.03491 ₆₇	208
209	13.841 ₂₈₁	177.8	1145.7	967.9	896.0	71.9	0.3082	28.09 ₈	0.03556 ₆₈	209
210	14.122 ₂₈₅	178.8	1146.0	967.2	895.2	72.0	0.3097	27.57 ₇	0.03622 ₆₉	210
211	14.407 ₂₉₀	179.8	1146.3	966.5	894.4	72.1	0.3112	27.05 ₆	0.03687 ₇₀	211
212	14.697 ₂₉₃	180.8	1146.6	965.8	893.5	72.3	0.3127	26.56 ₅	0.03753 ₇₁	212
213	14.990 ₂₉₉	181.8	1146.9	965.1	892.6	72.5	0.3142	26.10 ₄	0.03820 ₇₂	213
214	15.289 ₃₀₃	182.8	1147.2	964.4	891.8	72.6	0.3157	25.67 ₄	0.03886 ₇₃	214
215	15.592 ₃₀₉	183.8	1147.5	963.7	891.0	72.7	0.3172	25.19 ₃	0.03953 ₇₄	215
216	15.901 ₃₁₅	184.8	1147.8	963.0	890.2	72.8	0.3187	24.73 ₃	0.04021 ₇₅	216
217	16.214 ₃₁₉	185.8	1148.1	962.3	889.5	72.8	0.3202	24.28 ₃	0.04118 ₇₆	217
218	16.533 ₃₂₄	186.8	1148.4	961.6	888.7	72.9	0.3217	23.84 ₃	0.04194 ₇₇	218
219	16.857 ₃₂₉	187.8	1148.7	960.9	887.9	73.0	0.3232	23.41 ₃	0.04272 ₇₈	219
220	17.186 ₃₃₅	188.9	1149.0	960.1	887.1	73.0	0.3246	22.98 ₃	0.04352 ₈₀	220
221	17.521 ₃₄₀	189.9	1149.3	959.4	886.3	73.1	0.3261	22.56 ₃	0.04432 ₈₁	221
222	17.861 ₃₄₅	190.9	1149.7	958.8	885.6	73.2	0.3276	22.15 ₃	0.04514 ₈₂	222
223	18.206 ₃₅₁	191.9	1150.0	958.1	884.8	73.3	0.3291	21.76 ₃	0.04596 ₈₄	223

SATURATED STEAM—Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.		Temperature, Degrees Fahr.
<i>t</i>	<i>p</i>	<i>q</i>	<i>λ</i>	<i>r</i>	<i>p</i>	<i>Apu</i>	$\int \frac{cdt}{T}$	<i>s</i>	Weight, in Pounds, of one Cubic Foot.	<i>γ</i>	<i>t</i>
224	18.557 ³⁵⁷	102.9	1150.3	957.4	884.0	73.4	0.3305	21.37 ³⁸	0.04679 ⁸⁵		224
225	18.914 ³⁶²	103.9	1150.6	956.7	883.3	73.4	0.3320	20.99 ³⁷	0.04764 ⁸⁶		225
226	19.276 ³⁶⁸	104.9	1150.9	956.0	882.5	73.5	0.3335	20.62 ³⁷	0.04850 ⁸⁸		226
227	19.644 ³⁷⁴	195.9	1151.2	955.3	881.7	73.6	0.3349	20.25 ³⁶	0.04938 ⁹⁰		227
228	20.018 ³⁷⁹	196.9	1151.5	954.6	880.9	73.7	0.3364	19.89 ³⁶	0.05028 ⁹⁰		228
229	20.397 ³⁸⁶	197.9	1151.8	953.9	880.2	73.7	0.3379	19.54 ³⁵	0.05118 ⁹⁰		229
230	20.783 ³⁹²	198.9	1152.1	953.2	879.4	73.8	0.3393	19.20 ³³	0.05208 ⁹²		230
231	21.175 ³⁹⁷	199.9	1152.4	952.5	878.6	73.9	0.3408	18.87 ³³	0.05300 ⁹⁴		231
232	21.572 ⁴⁰⁴	201.0	1152.7	951.7	877.8	73.9	0.3423	18.54 ³²	0.05394 ⁹⁵		232
233	21.976 ⁴¹⁰	202.0	1153.0	951.0	877.0	74.0	0.3437	18.22 ³²	0.05489 ⁹⁷		233
234	22.386 ⁴¹⁷	203.0	1153.3	950.3	876.2	74.1	0.3452	17.90 ³¹	0.05586 ⁹⁹		234
235	22.803 ⁴²³	204.0	1153.6	949.6	875.4	74.2	0.3466	17.59 ³⁰	0.05683 ⁹⁹		235
236	23.226 ⁴²⁹	205.0	1153.9	948.9	874.6	74.3	0.3481	17.29 ³⁰	0.05784 ¹⁰¹		236
237	23.655 ⁴³⁶	206.0	1154.2	948.2	873.9	74.3	0.3495	16.99 ²⁹	0.05885 ¹⁰²		237
238	24.091 ⁴⁴²	207.0	1154.5	947.5	873.1	74.4	0.3510	16.70 ²⁸	0.05987 ¹⁰³		238
239	24.533 ⁴⁴⁹	208.0	1154.8	946.8	872.3	74.5	0.3524	16.42 ²⁸	0.06090 ¹⁰⁵		239
240	24.982 ⁴⁵⁶	209.0	1155.1	946.1	871.6	74.5	0.3538	16.14 ²⁷	0.06195 ¹⁰⁶		240
241	25.438 ⁴⁶²	210.0	1155.4	945.4	870.8	74.6	0.3553	15.87 ²⁷	0.06301 ¹⁰⁸		241
242	25.900 ⁴⁷⁰	211.0	1155.8	944.8	870.1	74.7	0.3567	15.60 ²⁶	0.06409 ¹¹⁰		242
243	26.370 ⁴⁷⁶	212.0	1156.1	944.1	869.3	74.8	0.3581	15.34 ²⁶	0.06519 ¹¹¹		243
244	26.846 ⁴⁸⁴	213.0	1156.4	943.4	868.5	74.9	0.3596	15.08 ²⁵	0.06630 ¹¹³		244
245	27.330 ⁴⁹¹	214.1	1156.7	942.6	867.7	74.9	0.3610	14.83 ²⁵	0.06743 ¹¹⁵		245
246	27.821 ⁴⁹⁸	215.1	1157.0	941.9	866.9	75.0	0.3624	14.58 ²⁴	0.06858 ¹¹⁵		246
247	28.319 ⁵⁰⁵	216.1	1157.3	941.2	866.1	75.1	0.3639	14.34 ²³	0.06973 ¹¹⁶		247
248	28.824 ⁵¹²	217.1	1157.6	940.5	865.3	75.2	0.3653	14.11 ²³	0.07089 ¹¹⁸		248
249	29.336 ⁵²⁰	218.1	1157.9	939.8	864.5	75.3	0.3667	13.88 ²³	0.07207 ¹²⁰		249
250	29.856 ⁵²⁸	219.1	1158.2	939.1	863.8	75.3	0.3681	13.65 ²²	0.07327 ¹²¹		250
251	30.384 ⁵³⁵	220.1	1158.5	938.4	863.0	75.4	0.3695	13.43 ²²	0.07448 ¹²³		251
252	30.919 ⁵⁴³	221.1	1158.8	937.7	862.2	75.5	0.3709	13.21 ²²	0.07571 ¹²⁶		252
253	31.462 ⁵⁵⁰	222.1	1159.1	937.0	861.4	75.6	0.3724	12.99 ²¹	0.07697 ¹²⁸		253
254	32.012 ⁵⁵⁹	223.1	1159.4	936.3	860.7	75.6	0.3738	12.78 ²¹	0.07825 ¹²⁸		254
255	32.571 ⁵⁶⁶	224.1	1159.7	935.6	859.9	75.7	0.3752	12.57 ²⁰	0.07953 ¹²⁹		255
256	33.137 ⁵⁷⁴	225.1	1160.0	934.9	859.1	75.8	0.3766	12.37 ²⁰	0.08082 ¹³²		256
257	33.711 ⁵⁸³	226.2	1160.3	934.1	858.2	75.9	0.3780	12.17 ¹⁹	0.08214 ¹³³		257
258	34.294 ⁵⁹⁰	227.2	1160.6	933.4	857.5	75.9	0.3794	11.98 ¹⁹	0.08347 ¹³⁵		258
259	34.884 ⁵⁹⁹	228.2	1160.9	932.7	856.7	76.0	0.3808	11.79 ¹⁹	0.08482 ¹³⁷		259
260	35.483 ⁶⁰⁷	229.2	1161.2	932.0	855.9	76.1	0.3822	11.60 ¹⁸	0.08619 ¹³⁸		260
261	36.090 ⁶¹⁶	230.2	1161.5	931.3	855.1	76.2	0.3836	11.42 ¹⁸	0.08757 ¹⁴⁰		261
262	36.706 ⁶²⁴	231.2	1161.9	930.7	854.4	76.3	0.3850	11.24 ¹⁸	0.08897 ¹⁴²		262
263	37.330 ⁶³³	232.2	1162.2	930.0	853.7	76.3	0.3864	11.06 ¹⁷	0.09039 ¹⁴³		263

SATURATED STEAM—Continued.

Temperature, Degree Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density, Weights in Pounds of Steam in Cubic Foot.	Temperature, Degree Fahr.
264	37.063	231.2	1102.5	920.3	852.0	70.4	0.3878	10.80	0.00182	264
265	38.604 ⁰⁴¹	234.2	1102.8	928.6	852.1	70.5	0.3901	10.72 ¹⁷	0.0027 ¹⁴⁵	265
266	39.255 ⁰⁵¹	235.2	1103.1	927.0	851.3	70.6	0.3906	10.55 ¹⁷	0.00474 ¹⁴⁷	266
	39.255 ⁰⁵⁰							10.55 ¹⁶	0.00474 ¹⁵⁰	
267	39.914 ⁰⁶⁸	236.2	1103.4	927.2	850.6	70.6	0.3919	10.30 ¹⁶	0.00624 ¹⁵¹	267
268	40.582 ⁰⁷⁷	237.2	1103.7	926.5	849.8	70.7	0.3924	10.23 ¹⁶	0.00775 ¹⁵²	268
269	41.250 ⁰⁸⁰	238.2	1104.0	925.8	849.0	70.8	0.3947	10.07 ¹⁵	0.00927 ¹⁵³	269
270	41.945 ⁰⁰⁵	239.3	1104.3	925.0	848.1	70.9	0.3961	9.918 ¹⁵²	0.1005 ¹⁶	270
271	42.640 ⁰⁰⁵	240.3	1104.6	924.3	847.4	70.9	0.3975	9.766 ¹⁴⁹	0.1024 ¹⁶	271
272	43.345 ⁰¹⁴	241.3	1104.9	923.6	846.6	71.0	0.3988	9.617 ¹⁴⁶	0.1040 ¹⁶	272
273	44.050 ⁰²³	242.3	1105.2	922.9	845.8	71.1	0.4002	9.471 ¹⁴³	0.1056 ¹⁶	273
274	44.752 ⁰³³	243.3	1105.5	922.2	845.0	71.2	0.4016	9.328 ¹⁴¹	0.1072 ¹⁶	274
275	45.515 ⁰⁴³	244.3	1105.8	921.5	844.2	71.3	0.4030	9.187 ¹³⁸	0.1088 ¹⁶	275
276	46.258 ⁰⁵³	245.3	1106.1	920.8	843.5	71.3	0.4043	9.040 ¹³⁶	0.1105 ¹⁷	276
277	47.011 ⁰⁶²	246.3	1106.4	920.1	842.7	71.4	0.4057	8.913 ¹³⁴	0.1122 ¹⁷	277
278	47.773 ⁰⁷²	247.3	1106.7	919.4	841.9	71.5	0.4071	8.780 ¹³¹	0.1139 ¹⁷	278
279	48.545 ⁰⁸³	248.3	1107.0	918.7	841.1	71.6	0.4084	8.649 ¹²⁸	0.1156 ¹⁷	279
280	49.328 ⁰⁹²	249.3	1107.3	918.0	840.4	71.6	0.4098	8.521 ¹²⁶	0.1173 ¹⁸	280
281	50.12 ¹⁰⁰	250.3	1107.6	917.3	839.6	71.7	0.4112	8.395 ¹²⁴	0.1191 ¹⁸	281
282	50.92 ¹⁰²	251.4	1108.0	916.6	838.8	71.8	0.4125	8.271 ¹²²	0.1206 ¹⁸	282
283	51.74 ¹⁰²	252.4	1108.3	915.9	838.0	71.9	0.4139	8.149 ¹¹⁹	0.1227 ¹⁸	283
284	52.56 ¹⁰³	253.4	1108.6	915.2	837.2	72.0	0.4152	8.030 ¹¹⁷	0.1245 ¹⁹	284
285	53.39 ¹⁰³	254.4	1108.9	914.5	836.5	72.0	0.4166	7.915 ¹¹⁵	0.1264 ¹⁹	285
286	54.24 ¹⁰³	255.4	1109.2	913.8	835.7	72.1	0.4179	7.797 ¹¹³	0.1283 ¹⁹	286
287	55.09 ¹⁰⁷	256.4	1109.5	913.1	834.9	72.2	0.4193	7.684 ¹¹¹	0.1302 ¹⁹	287
288	55.96 ¹⁰⁷	257.4	1109.8	912.4	834.1	72.3	0.4206	7.573 ¹⁰⁹	0.1321 ¹⁹	288
289	56.83 ¹⁰⁸	258.4	1110.1	911.7	833.4	72.3	0.4220	7.464 ¹⁰⁸	0.1340 ¹⁹	289
290	57.72 ¹⁰⁰	259.4	1110.4	911.0	832.6	72.4	0.4233	7.356 ¹⁰⁶	0.1359 ²⁰	290
291	58.62 ¹⁰¹	260.4	1110.7	910.3	831.8	72.5	0.4247	7.251 ¹⁰³	0.1379 ²⁰	291
292	59.53 ¹⁰²	261.4	1111.0	909.6	831.0	72.6	0.4260	7.148 ¹⁰²	0.1398 ²⁰	292
293	60.45 ¹⁰³	262.4	1111.3	908.9	830.3	72.6	0.4273	7.046 ¹⁰⁰	0.1419 ²¹	293
294	61.38 ¹⁰⁵	263.4	1111.6	908.2	829.5	72.7	0.4287	6.946 ⁹⁹	0.1440 ²¹	294
295	62.32 ¹⁰⁵	264.5	1111.9	907.4	828.6	72.8	0.4300	6.847 ⁹⁷	0.1461 ²¹	295
296	63.28 ¹⁰⁷	265.5	1112.2	906.7	827.8	72.9	0.4313	6.750 ⁹⁵	0.1482 ²¹	296
297	64.25 ¹⁰⁸	266.5	1112.5	906.0	827.0	73.0	0.4327	6.655 ⁹³	0.1503 ²¹	297
298	65.23 ¹⁰⁹	267.5	1112.8	905.3	826.3	73.0	0.4340	6.562 ⁹²	0.1524 ²¹	298
299	66.22 ¹⁰⁰	268.5	1113.1	904.6	825.5	73.1	0.4353	6.470 ⁹⁰	0.1545 ²²	299
300	67.22 ¹⁰²	269.5	1113.4	903.9	824.7	73.2	0.4366	6.380 ⁸⁸	0.1567 ²²	300
301	68.24 ¹⁰³	270.5	1113.7	903.2	823.9	73.3	0.4380	6.292 ⁸⁷	0.1589 ²²	301
302	69.27 ¹⁰³	271.5	1114.1	902.6	823.3	73.3	0.4393	6.205 ⁸⁵	0.1611 ²²	302
303	70.30 ¹⁰⁶	272.5	1114.4	901.9	822.5	73.4	0.4406	6.119 ⁸⁴	0.1634 ²³	303

SATURATED STEAM—Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.		Temperature, Degrees Fahr.
									Weight, in Pounds, of one Cubic Foot.		
304	71.36 ₁₀₆	273.5	1174.7	901.2	821.7	79.5	0.4419	0.035 ₈₃	0.1657 ₂₃		304
305	72.42 ₁₀₈	274.5	1175.0	900.5	820.9	79.6	0.4433	5.952 ₈₁	0.1680 ₂₃		305
306	73.50 ₁₀₉	275.5	1175.3	899.8	820.1	79.7	0.4446	5.871 ₈₀	0.1708 ₂₄		306
307	74.59 ₁₁₀	276.6	1175.6	899.0	819.3	79.7	0.4459	5.791 ₇₉	0.1727 ₂₄		307
308	75.69 ₁₁₁	277.6	1175.9	898.3	818.5	79.8	0.4472	5.712 ₇₈	0.1751 ₂₄		308
309	76.80 ₁₁₃	278.6	1176.2	897.6	817.7	79.9	0.4485	5.634 ₇₆	0.1775 ₂₄		309
310	77.93 ₁₁₄	279.6	1176.5	896.9	817.0	79.9	0.4498	5.558 ₇₄	0.1799 ₂₄		310
311	79.07 ₁₁₆	280.6	1176.8	896.2	816.2	80.0	0.4511	5.484 ₇₄	0.1823 ₂₅		311
312	80.23 ₁₁₆	281.6	1177.1	895.5	815.4	80.1	0.4524	5.410 ₇₃	0.1848 ₂₅		312
313	81.39 ₁₁₈	282.7	1177.4	894.7	814.5	80.2	0.4538	5.337 ₇₁	0.1873 ₂₆		313
314	82.57 ₁₂₀	283.7	1177.7	894.0	813.8	80.2	0.4552	5.266 ₇₁	0.1899 ₂₆		314
315	83.77 ₁₂₁	284.8	1178.0	893.2	812.9	80.3	0.4565	5.195 ₆₉	0.1925 ₂₆		315
316	84.98 ₁₂₂	285.8	1178.3	892.5	812.1	80.4	0.4579	5.126 ₆₈	0.1951 ₂₆		316
317	86.20 ₁₂₃	286.9	1178.6	891.7	811.3	80.4	0.4592	5.058 ₆₇	0.1977 ₂₇		317
318	87.43 ₁₂₅	287.9	1178.9	891.0	810.5	80.5	0.4606	4.991 ₆₆	0.2004 ₂₇		318
319	88.68 ₁₂₇	289.0	1179.2	890.2	809.6	80.6	0.4619	4.925 ₆₄	0.2031 ₂₇		319
320	89.95 ₁₂₈	290.0	1179.5	889.5	808.8	80.7	0.4633	4.861 ₆₄	0.2058 ₂₇		320
321	91.23 ₁₂₉	291.0	1179.8	888.8	808.1	80.7	0.4646	4.797 ₆₂	0.2085 ₂₇		321
322	92.52 ₁₃₀	292.1	1180.2	888.1	807.3	80.8	0.4659	4.735 ₆₂	0.2112 ₂₈		322
323	93.82 ₁₃₂	293.1	1180.5	887.4	806.5	80.9	0.4672	4.673 ₆₁	0.2140 ₂₈		323
324	95.14 ₁₃₄	294.2	1180.8	886.6	805.7	80.9	0.4686	4.612 ₆₀	0.2168 ₂₉		324
325	96.48 ₁₃₅	295.2	1181.1	885.9	804.9	81.0	0.4699	4.552 ₅₉	0.2197 ₂₉		325
326	97.83 ₁₃₇	296.3	1181.4	885.1	804.1	81.1	0.4713	4.493 ₅₇	0.2226 ₂₉		326
327	99.20 ₁₃₈	297.3	1181.7	884.4	803.3	81.1	0.4726	4.436 ₅₇	0.2255 ₂₉		327
328	100.58 ₁₃₉	298.4	1182.0	883.6	802.4	81.2	0.4739	4.379 ₅₆	0.2284 ₂₉		328
329	101.97 ₁₄₁	299.4	1182.3	882.9	801.6	81.3	0.4752	4.323 ₅₆	0.2313 ₃₀		329
330	103.38 ₁₄₃	300.5	1182.6	882.1	800.8	81.3	0.4766	4.267 ₅₄	0.2343 ₃₁		330
331	104.81 ₁₄₄	301.5	1182.9	881.4	800.0	81.4	0.4779	4.213 ₅₄	0.2374 ₃₀		331
332	106.25 ₁₄₅	302.6	1183.2	880.6	799.1	81.5	0.4792	4.159 ₅₂	0.2404 ₃₁		332
333	107.70 ₁₄₇	303.6	1183.5	879.9	798.4	81.5	0.4805	4.107 ₅₂	0.2435 ₃₁		333
334	109.17 ₁₄₉	304.6	1183.8	879.2	797.6	81.6	0.4818	4.055 ₅₁	0.2466 ₃₂		334
335	110.66 ₁₅₁	305.7	1184.1	878.4	796.7	81.7	0.4832	4.004 ₅₀	0.2498 ₃₂		335
336	112.17 ₁₅₂	306.7	1184.4	877.7	796.0	81.7	0.4845	3.954 ₅₀	0.2529 ₃₂		336
337	113.69 ₁₅₃	307.8	1184.7	876.9	795.1	81.8	0.4858	3.904 ₄₉	0.2561 ₃₃		337
338	115.22 ₁₅₅	308.8	1185.0	876.2	794.3	81.9	0.4871	3.855 ₄₈	0.2594 ₃₃		338
339	116.77 ₁₅₇	309.9	1185.3	875.4	793.5	81.9	0.4884	3.807 ₄₇	0.2627 ₃₃		339
340	118.34 ₁₅₉	310.9	1185.6	874.7	792.7	82.0	0.4897	3.760 ₄₇	0.2660 ₃₃		340
341	119.93 ₁₆₀	312.0	1185.9	873.9	791.8	82.1	0.4910	3.713 ₄₅	0.2693 ₃₃		341
342	121.53 ₁₆₂	313.0	1186.3	873.3	791.2	82.1	0.4923	3.668 ₄₅	0.2726 ₃₄		342
343	123.15 ₁₆₃	314.1	1186.6	872.5	790.3	82.2	0.4936	3.623 ₄₅	0.2760 ₃₅		343

SATURATED STEAM—Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.	Temperature, Degrees Fahr.
									Weight, in Pounds, of one Cubic Foot.	
344	124.78 ₁₀₅	315.1	1186.9	871.8	789.5	82.3	0.4940	3.578	0.2795 ₃₅	344
345	126.43 ₁₀₇	316.1	1187.2	871.1	788.8	82.3	0.4962	3.534 ₄₄	0.2827 ₃₅	345
346	128.10 ₁₀₉	317.2	1187.5	870.3	787.9	82.4	0.4975	3.491 ₄₂	0.2859 ₃₅	346
347	129.79 ₁₇₀	318.2	1187.8	869.6	787.1	82.5	0.4998	3.449 ₄₂	0.2890 ₃₅	347
348	131.49 ₁₇₂	319.3	1188.1	868.8	786.3	82.5	0.5001	3.407 ₄₂	0.2922 ₃₆	348
349	133.21 ₁₇₄	320.3	1188.4	868.1	785.5	82.6	0.5014	3.365 ₄₁	0.2954 ₃₇	349
350	134.95 ₁₇₆	321.4	1188.7	867.3	784.7	82.6	0.5027	3.324 ₄₀	0.2986 ₃₇	350
351	136.71 ₁₇₇	322.4	1189.0	866.6	783.9	82.7	0.5040	3.284 ₄₀	0.3018 ₃₇	351
352	138.48 ₁₇₉	323.5	1189.3	865.8	783.0	82.8	0.5053	3.245 ₄₀	0.3050 ₃₇	352
353	140.27 ₁₈₁	324.5	1189.6	865.1	782.3	82.8	0.5066	3.206 ₃₈	0.3119 ₃₈	353
354	142.08 ₁₈₃	325.6	1189.9	864.3	781.4	82.9	0.5078	3.168 ₃₈	0.3157 ₃₈	354
355	143.91 ₁₈₄	326.6	1190.2	863.6	780.7	82.9	0.5091	3.130 ₃₈	0.3196 ₃₉	355
356	145.75 ₁₈₇	327.7	1190.5	862.8	779.8	83.0	0.5104	3.092 ₃₆	0.3234 ₃₈	356
357	147.62 ₁₈₈	328.7	1190.8	862.1	779.0	83.1	0.5117	3.056 ₃₆	0.3272 ₃₉	357
358	149.50 ₁₉₀	329.7	1191.1	861.4	778.3	83.1	0.5130	3.020 ₃₆	0.3311 ₄₀	358
359	151.40 ₁₉₃	330.8	1191.4	860.6	777.4	83.2	0.5142	2.984 ₃₅	0.3351 ₄₀	359
360	153.33 ₁₉₄	331.8	1191.7	859.9	776.7	83.2	0.5155	2.949 ₃₅	0.3391 ₄₀	360
361	155.27 ₁₉₅	332.9	1192.0	859.1	775.8	83.3	0.5168	2.914 ₃₄	0.3431 ₄₁	361
362	157.22 ₁₉₈	333.9	1192.4	858.5	775.2	83.3	0.5181	2.880 ₃₄	0.3472 ₄₁	362
363	159.20 ₂₀₀	335.0	1192.7	857.7	774.3	83.4	0.5193	2.846 ₃₃	0.3513 ₄₂	363
364	161.20 ₂₀₂	336.0	1193.0	857.0	773.5	83.5	0.5206	2.813 ₃₂	0.3555 ₄₂	364
365	163.22 ₂₀₃	337.1	1193.3	856.2	772.7	83.5	0.5219	2.780 ₃₂	0.3597 ₄₂	365
366	165.25 ₂₀₆	338.1	1193.6	855.5	771.9	83.6	0.5231	2.748 ₃₂	0.3639 ₄₃	366
367	167.31 ₂₀₈	339.2	1193.9	854.7	771.1	83.6	0.5244	2.716 ₃₁	0.3682 ₄₃	367
368	169.39 ₂₀₉	340.2	1194.2	854.0	770.4	83.6	0.5257	2.685 ₃₁	0.3725 ₄₃	368
369	171.48 ₂₁₂	341.3	1194.5	853.2	769.5	83.7	0.5269	2.654 ₃₁	0.3768 ₄₄	369
370	173.60 ₂₁₄	342.3	1194.8	852.5	768.7	83.8	0.5282	2.623 ₃₀	0.3812 ₄₄	370
371	175.74 ₂₁₅	343.3	1195.1	851.8	768.0	83.8	0.5294	2.593 ₃₀	0.3856 ₄₅	371
372	177.89 ₂₁₈	344.4	1195.4	851.0	767.1	83.9	0.5307	2.563 ₂₉	0.3901 ₄₅	372
373	180.07 ₂₂₀	345.5	1195.7	850.2	766.3	83.9	0.5320	2.534 ₂₉	0.3946 ₄₆	373
374	182.27 ₂₂₂	346.5	1196.0	849.5	765.5	84.0	0.5332	2.505 ₂₉	0.3992 ₄₆	374
375	184.49 ₂₂₄	347.5	1196.3	848.8	764.8	84.0	0.5345	2.476 ₂₈	0.4038 ₄₆	375
376	186.73 ₂₂₆	348.6	1196.6	848.0	763.9	84.1	0.5357	2.448 ₂₈	0.4084 ₄₇	376
377	188.99 ₂₂₈	349.6	1196.9	847.3	763.2	84.1	0.5370	2.420 ₂₇	0.4131 ₄₇	377
378	191.27 ₂₃₁	350.6	1197.2	846.6	762.4	84.2	0.5382	2.393 ₂₇	0.4178 ₄₉	378
379	193.58 ₂₃₃	351.7	1197.5	845.8	761.6	84.2	0.5395	2.366 ₂₈	0.4227 ₄₉	379
380	195.91 ₂₃₄	352.8	1197.8	845.0	760.8	84.2	0.5407	2.339 ₂₅	0.4276 ₄₇	380
381	198.25 ₂₃₇	353.8	1198.1	844.3	760.0	84.3	0.5420	2.313 ₂₅	0.4323 ₄₉	381
382	200.62 ₂₄₀	354.9	1198.5	843.6	759.3	84.3	0.5432	2.287 ₂₅	0.4372 ₄₉	382
383	203.01 ₂₄₂	355.9	1198.8	842.9	758.5	84.4	0.5444	2.262 ₂₅	0.4421 ₄₉	383

SATURATED STEAM—Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density. Weight, in Pounds, of one Cubic Foot.	Temperature, Degrees Fahr.
<i>t</i>	<i>p</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>p</i>	<i>A</i> _{pu}	$\int \frac{cdt}{T}$	<i>s</i>	<i>γ</i>	<i>t</i>
384	205.43 ²⁴⁴	356.0	1199.1	842.2	757.8	84.4	0.5457	2.237 ²⁵	0.4470 ⁵¹	384
385	207.87 ²⁴⁶	358.0	1199.4	841.4	756.9	84.5	0.5460	2.212 ²⁵	0.4521 ⁵¹	385
386	210.33 ²⁴⁸	359.0	1199.7	840.7	756.2	84.5	0.5481	2.187 ²⁴	0.4572 ⁵¹	386
387	212.81 ²⁵⁰	360.1	1200.0	839.9	755.3	84.6	0.5494	2.163 ²⁴	0.4623 ⁵²	387
388	215.31 ²⁵³	361.1	1200.3	839.2	754.6	84.6	0.5506	2.139 ²⁴	0.4675 ⁵²	388
389	217.84 ²⁵⁵	362.2	1200.6	838.4	753.8	84.6	0.5518	2.115 ²³	0.4728 ⁵³	389
390	220.39 ²⁵⁷	363.2	1200.9	837.7	753.0	84.7	0.5531	2.092 ²³	0.4780 ⁵³	390
391	222.96 ²⁶⁰	364.3	1201.2	836.9	752.2	84.7	0.5543	2.069 ²³	0.4833 ⁵⁴	391
392	225.56 ²⁶³	365.3	1201.5	836.2	751.4	84.8	0.5555	2.046 ²²	0.4887 ⁵⁴	392
393	228.19 ²⁶⁴	366.4	1201.8	835.4	750.6	84.8	0.5568	2.024 ²²	0.4941 ⁵⁵	393
394	230.83 ²⁶⁷	367.4	1202.1	834.7	749.9	84.8	0.5580	2.002 ²²	0.4996 ⁵⁵	394
395	233.50 ²⁶⁹	368.4	1202.4	834.0	749.1	84.9	0.5592	1.980 ²²	0.5051 ⁵⁶	395
396	236.19 ²⁷²	369.5	1202.7	833.2	748.3	84.9	0.5604	1.958 ²¹	0.5107 ⁵⁶	396
397	238.91 ²⁷⁴	370.5	1203.0	832.5	747.6	84.9	0.5616	1.937 ²¹	0.5163 ⁵⁶	397
398	241.65 ²⁷⁷	371.6	1203.3	831.7	746.7	85.0	0.5629	1.916 ²¹	0.5219 ⁵⁸	398
399	244.42 ²⁷⁹	372.6	1203.6	831.0	746.0	85.0	0.5641	1.895 ²¹	0.5277 ⁵⁹	399
400	247.21 ²⁸²	373.7	1203.9	830.2	745.2	85.0	0.5653	1.874 ²⁰	0.5336 ⁵⁸	400
401	250.03 ²⁸⁴	374.7	1204.2	829.5	744.5	85.0	0.5665	1.854 ²⁰	0.5394 ⁵⁸	401
402	252.87 ²⁸⁷	375.8	1204.6	828.8	743.7	85.1	0.5677	1.834 ²⁰	0.5452 ⁶⁰	402
403	255.74 ²⁸⁹	376.8	1204.9	828.1	743.0	85.1	0.5689	1.814 ²⁰	0.5512 ⁶⁰	403
404	258.63 ²⁹²	377.9	1205.2	827.3	742.2	85.1	0.5701	1.794 ¹⁹	0.5572 ⁶¹	404
405	261.55 ²⁹⁵	378.9	1205.5	826.6	741.4	85.2	0.5714	1.775 ¹⁹	0.5633 ⁶²	405
406	264.50 ²⁹⁷	380.0	1205.8	825.8	740.6	85.2	0.5726	1.756 ¹⁹	0.5695 ⁶¹	406
407	267.47 ³⁰⁰	381.0	1206.1	825.1	739.9	85.2	0.5738	1.737 ¹⁸	0.5756 ⁶²	407
408	270.47 ³⁰²	382.0	1206.4	824.4	739.2	85.2	0.5741	1.719 ¹⁹	0.5818 ⁶³	408
409	273.49 ³⁰⁵	383.1	1206.7	823.6	738.3	85.3	0.5762	1.700 ¹⁸	0.5881 ⁶⁴	409
410	276.54 ³⁰⁸	384.1	1207.0	822.9	737.6	85.3	0.5774	1.682 ¹⁸	0.5945 ⁶⁵	410
411	279.62 ³¹¹	385.2	1207.3	822.1	736.8	85.3	0.5786	1.664 ¹⁸	0.6016 ⁶	411
412	282.73 ³¹³	386.2	1207.6	821.4	736.1	85.3	0.5798	1.646 ¹⁷	0.6077 ⁶	412
413	285.86 ³¹⁶	387.3	1207.9	820.6	735.3	85.3	0.5810	1.629 ¹⁷	0.6147 ⁶	413
414	289.02 ³¹⁹	388.3	1208.2	819.9	734.5	85.4	0.5822	1.612 ¹⁷	0.6207 ⁷	414
415	292.21 ³²¹	389.4	1208.5	819.1	733.7	85.4	0.5834	1.595 ¹⁷	0.6277 ⁷	415
416	295.42 ³²⁵	390.4	1208.8	818.4	733.0	85.4	0.5846	1.578 ¹⁷	0.6347 ⁷	416
417	298.67 ³²⁷	391.5	1209.1	817.6	732.2	85.4	0.5858	1.561 ¹⁶	0.6416 ⁶	417
418	301.94 ³³⁰	392.5	1209.4	816.9	731.5	85.4	0.5870	1.545 ¹⁷	0.6477 ⁷	418
419	305.24 ³³³	393.6	1209.7	816.1	730.7	85.4	0.5881	1.528 ¹⁶	0.6547 ⁷	419
420	308.57 ³³⁶	394.6	1210.0	815.4	730.0	85.4	0.5893	1.512 ¹⁶	0.6617 ⁷	420
421	311.93 ³³⁸	395.6	1210.3	814.7	729.3	85.4	0.5905	1.496 ¹⁶	0.6688 ⁸	421
422	315.31 ³⁴²	396.7	1210.7	814.0	728.5	85.5	0.5917	1.480 ¹⁵	0.6767 ⁷	422
423	318.73 ³⁴⁵	397.7	1211.0	813.3	727.8	85.5	0.5929	1.465 ¹⁶	0.6837 ⁷	423

SATURATED STEAM — Continued.

Temperature, Degrees Fahr.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY.	Temperature, Degrees Fahr.
									Weight, in Pounds, of one Cubic Foot.	
424	322.18 ₃₄₇	398.8	1211.3	812.5	727.0	85.5	0.5041	1.449 ₁₅	0.690 ₇	424
425	325.05 ₃₅₁	399.8	1211.6	811.8	726.3	85.5	0.5053	1.434 ₁₅	0.697 ₇	425
426	329.16 ₃₅₄	400.9	1211.9	811.0	725.5	85.5	0.5064	1.419 ₁₅	0.706 ₇	426
427	332.70 ₃₅₆	401.9	1212.2	810.3	724.8	85.5	0.5076	1.404 ₁₄	0.712 ₇	427
428	336.26 ₃₅₈	403.0	1212.5	809.5	724.0	85.5	0.5088	1.390 ₁₄	0.719 ₇	428

TABLE II.
SATURATED STEAM.
ENGLISH UNITS.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY. Weight, in Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
<i>p</i>	<i>t</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>p</i>	<i>A p u</i>	$\int \frac{cdt}{T}$	<i>s</i>	<i>γ</i>	<i>p</i>
1	101.99 ²⁴²⁸	70.0	1113.1	1043.0	981.1	61.9	0.1320	334.6 ^{161.0}	0.00299 ²⁷⁷	1
2	126.27 ¹⁵³⁵	94.4	1120.5	1026.1	961.9	64.2	0.1754	173.6 ^{55.2}	0.00576 ²⁶⁸	2
3	141.62 ¹¹⁴⁷	109.8	1125.1	1015.3	949.5	65.8	0.2013	118.4 ^{28.1}	0.00844 ²⁶³	3
4	153.09 ⁹²⁵	121.4	1128.6	1007.2	940.4	66.8	0.2203	90.31 ^{17.09}	0.01107 ²⁵⁹	4
5	162.34 ⁷⁸⁰	130.7	1131.5	1000.8	933.1	67.7	0.2353	73.22 ^{11.55}	0.01366 ²⁵⁶	5
6	170.14 ⁶⁷⁶	138.6	1133.8	995.2	926.7	68.5	0.2480	61.07 ^{8.30}	0.01622 ²⁵²	6
7	176.09 ⁶⁰²	145.4	1135.9	990.5	921.4	69.1	0.2587	53.37 ^{6.30}	0.01874 ²⁵¹	7
8	182.92 ⁵⁴¹	151.5	1137.7	986.2	916.5	69.7	0.2682	47.07 ^{4.94}	0.02123 ²⁴⁹	8
9	188.33 ⁴⁹²	156.9	1139.4	982.5	912.4	70.1	0.2766	42.13 ^{3.97}	0.02374 ²⁴⁷	9
10	193.25 ⁴⁵³	161.9	1140.9	979.0	908.4	70.6	0.2842	38.16 ^{3.28}	0.02621 ²⁴⁵	10
11	197.78 ⁴²⁰	166.5	1142.3	975.8	904.8	71.0	0.2912	34.88 ^{2.74}	0.02866 ²⁴⁵	11
12	201.98 ³⁹¹	170.7	1143.6	972.9	901.5	71.4	0.2976	32.14 ^{2.32}	0.03111 ²⁴⁴	12
13	205.89 ³⁶⁸	174.6	1144.7	970.1	898.4	71.7	0.3035	29.82 ^{2.03}	0.03355 ²⁴⁵	13
14	209.57 ³⁴⁶	178.3	1145.8	967.5	895.5	72.0	0.3091	27.79 ^{1.64}	0.03600 ²²⁶	14
15	213.03 ³²⁹	181.8	1146.9	965.1	892.6	72.5	0.3143	26.15 ^{1.56}	0.03826 ²⁴¹	15
16	216.32 ³¹²	185.1	1147.9	962.8	890.0	72.8	0.3192	24.59 ^{1.37}	0.04067 ²⁴⁰	16
17	219.44 ²⁹⁶	188.3	1148.9	960.6	887.6	73.0	0.3238	23.22 ^{1.22}	0.04307 ²⁴⁰	17
18	222.40 ²⁸⁴	191.3	1149.8	958.5	885.3	73.2	0.3282	22.00 ^{1.10}	0.04547 ²³⁹	18
19	225.24 ²⁷¹	194.1	1150.7	956.6	883.2	73.4	0.3324	20.90 ^{0.99}	0.04786 ²³⁷	19
20	227.95 ²⁶⁰	196.9	1151.5	954.6	881.0	73.6	0.3363	19.91 ⁹⁰	0.05023 ²³⁶	20
21	230.55 ²⁵¹	199.5	1152.3	952.8	879.0	73.8	0.3401	19.01 ⁸¹	0.05259 ²³⁶	21
22	233.06 ²⁴¹	202.0	1153.0	951.0	877.0	74.0	0.3438	18.20 ⁷⁵	0.05495 ²³⁶	22
23	235.47 ²³²	204.5	1153.7	949.2	875.0	74.2	0.3473	17.45 ⁶⁹	0.05731 ²³⁵	23
24	237.79 ²²⁵	206.8	1154.4	947.6	873.2	74.4	0.3506	16.76 ⁶³	0.05966 ²³³	24
25	240.04 ²¹⁷	209.1	1155.1	946.0	871.5	74.5	0.3539	16.13 ⁵⁸	0.06194 ²³³	25
26	242.21 ²¹¹	211.2	1155.8	944.6	869.9	74.7	0.3570	15.55 ⁵⁵	0.06432 ²³⁴	26
27	244.32 ²⁰⁴	213.4	1156.5	943.1	868.2	74.9	0.3600	15.00 ⁵¹	0.06666 ²³³	27
28	246.36 ¹⁹⁸	215.4	1157.1	941.7	866.7	75.0	0.3629	14.49 ⁴⁶	0.06896 ²³¹	28
29	248.34 ¹⁹³	217.4	1157.7	940.3	865.1	75.2	0.3657	14.03 ⁴⁴	0.07136 ²³⁰	29
30	250.27 ¹⁸⁸	219.4	1158.3	938.9	863.6	75.3	0.3685	13.59 ⁴¹	0.07360 ²³⁰	30
31	252.15 ¹⁸³	221.3	1158.8	937.5	862.0	75.5	0.3712	13.18 ⁴⁰	0.07590 ²³¹	31
32	253.98 ¹⁷⁸	223.1	1159.4	936.3	860.7	75.6	0.3737	12.78 ³⁷	0.07821 ²³⁰	32
33	255.76 ¹⁷⁴	224.9	1159.9	935.0	859.2	75.8	0.3762	12.41 ³⁴	0.08051 ²²⁹	33

SATURATED STEAM—Continued.

Pressure, Pounds per Square Inch.	Temperature, ° Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.	Pressure, Pounds per Square Inch.
									Weight, in Pounds, of one Cubic Foot.	
34	257.50 ¹⁰⁰	230.7	1160.4	933.7	857.8	75.0	0.3787	12.07 ¹²	0.0828 ¹²	34
35	259.19 ¹⁰⁰	230.4	1161.0	932.6	856.6	76.0	0.3811	11.78 ¹²	0.0854 ¹²	35
36	260.85 ¹⁰²	230.0	1161.5	931.5	855.3	76.2	0.3834	11.45 ¹²	0.0879 ¹²	36
37	262.47 ¹⁰⁰	231.7	1162.0	930.3	854.0	76.3	0.3853	11.16 ¹²	0.0896 ¹²	37
38	264.06 ¹⁰⁵	233.3	1162.5	929.2	852.8	76.4	0.3878	10.88 ¹²	0.0919 ¹²	38
39	265.61 ¹⁵¹	234.8	1163.0	928.2	851.7	76.5	0.3900	10.62 ¹²	0.0941 ¹²	39
40	267.13 ¹⁴⁹	236.4	1163.4	927.0	850.3	76.7	0.3921	10.37 ²⁴	0.0964 ¹²⁵	40
41	268.62 ¹⁴⁶	237.9	1163.9	926.0	849.2	76.8	0.3942	10.13 ¹²	0.0986 ¹²¹	41
42	270.08 ¹⁴³	239.3	1164.3	925.0	848.1	76.9	0.3962	9.89 ¹¹⁶	0.1009 ¹²³	42
43	271.51 ¹⁴⁰	240.8	1164.8	924.0	847.0	77.0	0.3982	9.66 ¹²⁰	0.1032 ¹²²	43
44	272.91 ¹³⁸	242.2	1165.2	923.0	845.9	77.1	0.4001	9.43 ¹⁰⁷	0.1054 ¹²³	44
45	274.29 ¹³⁶	243.6	1165.6	922.0	844.8	77.2	0.4020	9.20 ¹⁰⁰	0.1077 ¹²³	45
46	275.65 ¹³⁴	245.0	1166.0	921.0	843.7	77.3	0.4038	8.97 ¹²³	0.1099 ¹²³	46
47	276.99 ¹³¹	246.3	1166.4	920.1	842.7	77.4	0.4056	8.74 ¹⁷⁴	0.1122 ¹²³	47
48	278.30 ¹²⁸	247.6	1166.8	919.2	841.7	77.5	0.4074	8.50 ¹⁰⁷	0.1144 ¹²³	48
49	279.58 ¹²⁷	248.9	1167.2	918.3	840.7	77.6	0.4092	8.27 ¹⁵⁹	0.1166 ¹²³	49
50	280.85 ¹²⁵	250.2	1167.6	917.4	839.7	77.7	0.4109	8.04 ¹⁵³	0.1188 ¹²³	50
51	282.10 ¹²²	251.5	1168.0	916.5	838.7	77.8	0.4126	7.82 ¹⁴⁰	0.1211 ¹²³	51
52	283.33 ¹²¹	252.7	1168.4	915.7	837.8	77.9	0.4143	7.60 ¹⁴²	0.1233 ¹²³	52
53	284.55 ¹¹⁹	253.9	1168.7	914.8	836.8	78.0	0.4160	7.38 ¹³⁸	0.1255 ¹²³	53
54	285.72 ¹¹⁷	255.1	1169.1	914.0	835.9	78.1	0.4175	7.16 ¹³³	0.1277 ¹²³	54
55	286.88 ¹¹⁶	256.3	1169.4	913.1	834.9	78.2	0.4191	6.94 ¹²⁸	0.1299 ¹²³	55
56	288.05 ¹¹⁴	257.5	1169.8	912.3	834.0	78.3	0.4207	6.72 ¹²⁵	0.1321 ¹²³	56
57	289.19 ¹¹²	258.6	1170.1	911.5	833.1	78.4	0.4222	6.50 ¹²⁰	0.1344 ¹²³	57
58	290.31 ¹¹¹	259.7	1170.5	910.8	832.4	78.4	0.4237	6.28 ¹¹⁵	0.1366 ¹²¹	58
59	291.42 ¹⁰⁰	260.8	1170.8	910.0	831.5	78.5	0.4252	6.06 ¹¹²	0.1388 ¹²²	59
60	292.51 ¹⁰⁸	261.9	1171.2	909.3	830.7	78.6	0.4267	5.84 ¹⁰⁹	0.1409 ¹²²	60
61	293.59 ¹⁰⁶	263.0	1171.5	908.5	829.8	78.7	0.4281	5.62 ¹⁰⁵	0.1431 ¹²²	61
62	294.65 ¹⁰⁵	264.1	1171.8	907.7	828.9	78.8	0.4295	5.40 ¹⁰³	0.1453 ¹²²	62
63	295.70 ¹⁰⁴	265.2	1172.1	906.9	828.0	78.9	0.4309	5.18 ⁹⁹	0.1475 ¹²²	63
64	296.74 ¹⁰³	266.2	1172.4	906.2	827.3	78.9	0.4323	4.96 ⁹⁷	0.1497 ¹²²	64
65	297.77 ¹⁰¹	267.2	1172.7	905.5	826.5	79.0	0.4337	4.74 ⁹³	0.1519 ¹²²	65
66	298.78 ⁹⁹	268.3	1173.0	904.7	825.6	79.1	0.4350	4.52 ⁸⁹	0.1541 ¹²¹	66
67	299.77 ⁹⁹	269.3	1173.3	904.0	824.8	79.2	0.4363	4.30 ⁸⁴	0.1562 ¹²¹	67
68	300.76 ⁹⁸	270.3	1173.6	903.3	824.1	79.2	0.4376	4.08 ⁸¹	0.1584 ¹²¹	68
69	301.74 ⁹⁷	271.2	1173.9	902.7	823.4	79.3	0.4389	3.86 ⁸¹	0.1606 ¹²¹	69
70	302.71 ⁹⁵	272.2	1174.3	902.1	822.7	79.4	0.4402	3.64 ⁸¹	0.1628 ¹²¹	70
71	303.66 ⁹⁵	273.2	1174.6	901.4	821.9	79.5	0.4415	3.42 ⁷⁹	0.1649 ¹²¹	71
72	304.61 ⁹³	274.1	1174.9	900.8	821.3	79.5	0.4428	3.20 ⁷⁶	0.1671 ¹²¹	72
73	305.54 ⁹²	275.1	1175.2	900.1	820.5	79.6	0.4440	2.98 ⁷⁴	0.1693 ¹²¹	73

SATURATED STEAM—Continued.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY. Weight, in Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
<i>p</i>	<i>t</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>p</i>	<i>Apw</i>	$\int \frac{cdt}{T}$	<i>s</i>	<i>γ</i>	<i>p</i>
74	306.46 ₀₂	276.0	1175.4	899.4	819.7	79.7	0.4452	5.834 ₇₂	0.1714 ₂₂	74
75	307.38 ₉₀	276.9	1175.7	898.8	819.1	79.7	0.4464	5.762 ₇₁	0.1736 ₂₁	75
76	308.28 ₀₀	277.8	1176.0	898.2	818.4	79.8	0.4476	5.691 ₇₀	0.1757 ₂₂	76
77	309.18 ₈₈	278.7	1176.2	897.5	817.6	79.9	0.4487	5.621 ₆₇	0.1779 ₂₂	77
78	310.06 ₈₈	279.6	1176.5	896.9	817.0	79.9	0.4499	5.554 ₆₆	0.1801 ₂₁	78
79	310.94 ₈₆	280.5	1176.8	896.3	816.3	80.0	0.4511	5.488 ₆₃	0.1822 ₂₁	79
80	311.80 ₈₆	281.4	1177.0	895.6	815.5	80.1	0.4522	5.425 ₆₃	0.1843 ₂₂	80
81	312.66 ₈₅	282.3	1177.3	895.0	814.9	80.1	0.4534	5.362 ₆₁	0.1865 ₂₁	81
82	313.51 ₈₅	283.2	1177.6	894.4	814.2	80.2	0.4545	5.301 ₆₁	0.1886 ₂₂	82
83	314.36 ₈₃	284.1	1177.8	893.7	813.4	80.3	0.4557	5.240 ₅₈	0.1908 ₂₂	83
84	315.19 ₈₂	285.0	1178.1	893.1	812.8	80.3	0.4568	5.182 ₅₇	0.1930 ₂₁	84
85	316.02 ₈₂	285.8	1178.3	892.5	812.1	80.4	0.4579	5.125 ₅₆	0.1951 ₂₂	85
86	316.84 ₈₁	286.7	1178.6	891.9	811.5	80.4	0.4590	5.069 ₅₅	0.1973 ₂₁	86
87	317.65 ₈₀	287.5	1178.8	891.3	810.8	80.5	0.4601	5.014 ₅₃	0.1994 ₂₂	87
88	318.45 ₈₀	288.4	1179.1	890.7	810.2	80.5	0.4612	4.961 ₅₂	0.2016 ₂₁	88
89	319.25 ₇₉	289.2	1179.3	890.1	809.5	80.6	0.4622	4.909 ₅₁	0.2037 ₂₁	89
90	320.04 ₇₇	290.0	1179.6	889.6	808.9	80.7	0.4633	4.858 ₅₀	0.2058 ₂₂	90
91	320.83 ₇₇	290.8	1179.8	889.0	808.3	80.7	0.4643	4.808 ₄₈	0.2080 ₂₁	91
92	321.60 ₇₇	291.6	1180.0	888.4	807.6	80.8	0.4653	4.760 ₄₈	0.2101 ₂₁	92
93	322.37 ₇₇	292.4	1180.3	887.9	807.1	80.8	0.4663	4.712 ₄₇	0.2122 ₂₂	93
94	323.14 ₇₅	293.2	1180.5	887.3	806.4	80.9	0.4673	4.665 ₄₆	0.2144 ₂₁	94
95	323.89 ₇₅	294.0	1180.7	886.7	805.8	80.9	0.4683	4.619 ₄₅	0.2165 ₂₁	95
96	324.64 ₇₄	294.8	1181.0	886.2	805.2	81.0	0.4693	4.574 ₄₄	0.2186 ₂₂	96
97	325.38 ₇₄	295.6	1181.2	885.6	804.6	81.0	0.4703	4.530 ₄₄	0.2208 ₂₁	97
98	326.12 ₇₄	296.4	1181.4	885.0	803.9	81.1	0.4713	4.486 ₄₂	0.2229 ₂₁	98
99	326.86 ₇₂	297.1	1181.6	884.5	803.4	81.1	0.4723	4.444 ₄₁	0.2250 ₂₁	99
100	327.58 ₇₂	297.9	1181.9	884.0	802.8	81.2	0.4733	4.403 ₄₁	0.2271 ₂₂	100
101	328.30 ₇₂	298.6	1182.1	883.5	802.3	81.2	0.4743	4.362 ₄₀	0.2293 ₂₁	101
102	329.02 ₇₁	299.4	1182.3	882.9	801.6	81.3	0.4753	4.322 ₄₀	0.2314 ₂₁	102
103	329.73 ₇₀	300.1	1182.5	882.4	801.1	81.3	0.4762	4.282 ₃₈	0.2335 ₂₁	103
104	330.43 ₇₀	300.9	1182.7	881.8	800.4	81.4	0.4771	4.244 ₃₈	0.2356 ₂₂	104
105	331.13 ₇₀	301.6	1182.9	881.3	799.9	81.4	0.4780	4.206 ₃₇	0.2378 ₂₁	105
106	331.83 ₆₉	302.3	1183.1	880.8	799.3	81.5	0.4790	4.169 ₃₇	0.2399 ₂₁	106
107	332.52 ₆₈	303.0	1183.4	880.4	798.9	81.5	0.4799	4.132 ₃₆	0.2420 ₂₁	107
108	333.20 ₆₈	303.8	1183.6	879.8	798.2	81.6	0.4808	4.096 ₃₅	0.2441 ₂₁	108
109	333.88 ₆₈	304.5	1183.8	879.3	797.7	81.6	0.4817	4.061 ₃₅	0.2462 ₂₂	109
110	334.56 ₆₇	305.2	1184.0	878.8	797.1	81.7	0.4826	4.026 ₃₄	0.2484 ₂₁	110
111	335.23 ₆₆	305.9	1184.2	878.3	796.6	81.7	0.4835	3.992 ₃₃	0.2505 ₂₁	111
112	335.89 ₆₆	306.6	1184.4	877.8	796.1	81.7	0.4843	3.959 ₃₃	0.2526 ₂₁	112
113	336.55 ₆₅	307.3	1184.6	877.3	795.5	81.8	0.4852	3.926 ₃₂	0.2547 ₂₁	113

SATURATED STEAM—Continued.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density, Weight, in Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
<i>p</i>	<i>t</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>p</i>	<i>Apu</i>	$\int \frac{dH}{T}$	<i>v</i>	<i>γ</i>	<i>p</i>
114	337.20	308.0	1184.8	876.8	795.0	81.8	0.4890	3.804	0.2568	114
115	337.50	308.7	1185.0	876.3	794.4	81.9	0.4890	3.802	0.2569	115
116	338.50	309.4	1185.2	875.8	793.9	81.9	0.4877	3.831	0.2567	116
117	339.14	310.0	1185.4	875.4	793.5	81.9	0.4880	3.801	0.2561	117
118	339.78	310.7	1185.6	874.9	792.9	82.0	0.4884	3.770	0.2563	118
119	340.42	311.4	1185.8	874.4	792.4	82.0	0.4903	3.740	0.2574	119
120	341.05	312.0	1186.0	874.0	791.9	82.1	0.4911	3.711	0.2595	120
121	341.67	312.7	1186.2	873.5	791.4	82.1	0.4919	3.683	0.2715	121
122	342.29	313.3	1186.3	873.0	790.8	82.2	0.4927	3.655	0.2730	122
123	342.91	314.0	1186.5	872.5	790.3	82.2	0.4935	3.627	0.2757	123
124	343.52	314.6	1186.7	872.1	789.9	82.2	0.4943	3.600	0.2779	124
125	344.13	315.2	1186.9	871.7	789.4	82.3	0.4951	3.572	0.2800	125
126	344.75	315.9	1187.1	871.2	788.9	82.3	0.4959	3.546	0.2820	126
127	345.36	316.5	1187.3	870.8	788.4	82.4	0.4967	3.520	0.2841	127
128	345.98	317.1	1187.4	870.3	787.9	82.4	0.4974	3.494	0.2862	128
129	346.59	317.7	1187.6	869.9	787.5	82.4	0.4982	3.468	0.2883	129
130	347.19	318.4	1187.8	869.4	786.9	82.5	0.4990	3.444	0.2904	130
131	347.79	319.0	1188.0	869.0	786.5	82.5	0.4997	3.419	0.2925	131
132	348.39	319.6	1188.2	868.6	786.1	82.5	0.5005	3.395	0.2946	132
133	348.97	320.2	1188.4	868.2	785.6	82.6	0.5012	3.371	0.2967	133
134	349.55	320.8	1188.5	867.7	785.1	82.6	0.5020	3.347	0.2988	134
135	350.13	321.4	1188.7	867.3	784.7	82.6	0.5027	3.323	0.3009	135
136	350.70	322.0	1188.9	866.9	784.2	82.7	0.5035	3.300	0.3030	136
137	351.27	322.6	1189.0	866.4	783.7	82.7	0.5042	3.277	0.3051	137
138	351.83	323.2	1189.2	866.0	783.3	82.7	0.5049	3.255	0.3072	138
139	352.39	323.8	1189.4	865.6	782.8	82.8	0.5056	3.234	0.3092	139
140	352.95	324.4	1189.5	865.1	782.3	82.8	0.5064	3.212	0.3113	140
141	353.49	325.0	1189.7	864.7	781.9	82.8	0.5071	3.191	0.3134	141
142	354.05	325.6	1189.9	864.3	781.4	82.9	0.5078	3.170	0.3155	142
143	354.59	326.1	1190.1	864.0	781.1	82.9	0.5085	3.149	0.3176	143
144	355.05	326.7	1190.2	863.5	780.6	82.9	0.5092	3.128	0.3197	144
145	355.50	327.2	1190.4	863.2	780.2	83.0	0.5099	3.107	0.3218	145
146	356.15	327.8	1190.6	862.8	779.8	83.0	0.5106	3.087	0.3239	146
147	356.67	328.3	1190.7	862.4	779.4	83.0	0.5113	3.068	0.3260	147
148	357.20	328.9	1190.9	862.0	778.9	83.1	0.5119	3.049	0.3280	148
149	357.73	329.4	1191.0	861.6	778.5	83.1	0.5126	3.030	0.3300	149
150	358.26	330.0	1191.2	861.2	778.1	83.1	0.5133	3.011	0.3321	150
151	358.78	330.5	1191.4	860.9	777.7	83.2	0.5140	2.992	0.3342	151
152	359.30	331.1	1191.5	860.4	777.2	83.2	0.5146	2.973	0.3363	152
153	359.82	331.6	1191.7	860.1	776.9	83.2	0.5153	2.955	0.3384	153

SATURATED STEAM—Continued.

p	t	q	λ	r	ρ	A_{pu}	$\int \frac{cdt}{T}$	s	γ	f
Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density, in Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
154	300.34 ₅₂	332.2	1191.8	859.6	776.3	83.3	0.5100	2.937 ₁₈	0.3405 ₂₁	154
155	300.86 ₅₁	332.7	1192.0	859.3	776.0	83.3	0.5106	2.919 ₁₈	0.3426 ₂₁	155
156	301.37 ₅₁	333.3	1192.2	858.9	775.6	83.3	0.5113	2.901 ₁₇	0.3447 ₂₀	156
157	301.88 ₅₁	333.8	1192.3	858.5	775.2	83.3	0.5119	2.884 ₁₇	0.3467 ₂₁	157
158	302.39 ₅₁	334.3	1192.5	858.2	774.8	83.4	0.5126	2.867 ₁₇	0.3488 ₂₁	158
159	302.90 ₅₀	334.9	1192.7	857.8	774.4	83.4	0.5132	2.850 ₁₇	0.3509 ₂₁	159
160	303.40 ₅₀	335.4	1192.8	857.4	774.0	83.4	0.5138	2.833 ₁₇	0.3530 ₂₁	160
161	303.90 ₅₀	335.9	1193.0	857.1	773.7	83.4	0.5205	2.816 ₁₇	0.3551 ₂₁	161
162	304.40 ₅₀	336.4	1193.1	856.7	772.2	83.5	0.5211	2.799 ₁₆	0.3572 ₂₁	162
163	304.90 ₄₉	337.0	1193.3	856.3	772.8	83.5	0.5217	2.782 ₁₆	0.3593 ₂₁	163
164	305.39 ₄₉	337.5	1193.4	855.9	772.4	83.5	0.5224	2.767 ₁₆	0.3614 ₂₁	164
165	305.88 ₄₉	338.0	1193.6	855.6	772.0	83.6	0.5230	2.751 ₁₅	0.3635 ₂₀	165
166	306.37 ₄₈	338.5	1193.7	855.2	771.6	83.6	0.5236	2.736 ₁₅	0.3655 ₂₀	166
167	306.85 ₄₈	339.0	1193.9	854.9	771.3	83.6	0.5242	2.721 ₁₅	0.3675 ₂₀	167
168	307.33 ₄₈	339.5	1194.0	854.5	770.9	83.6	0.5248	2.706 ₁₅	0.3695 ₂₁	168
169	307.81 ₄₈	340.0	1194.2	854.2	770.5	83.7	0.5254	2.691 ₁₅	0.3716 ₂₁	169
170	308.29 ₄₈	340.5	1194.3	853.8	770.1	83.7	0.5260	2.676 ₁₅	0.3737 ₂₁	170
171	308.77 ₄₇	341.0	1194.4	853.4	769.7	83.7	0.5266	2.661 ₁₄	0.3758 ₂₀	171
172	309.24 ₄₇	341.5	1194.6	853.1	769.4	83.7	0.5272	2.647 ₁₅	0.3778 ₂₁	172
173	309.71 ₄₇	342.0	1194.7	852.7	768.9	83.8	0.5278	2.632 ₁₄	0.3799 ₂₁	173
174	310.18 ₄₇	342.5	1194.8	852.3	768.5	83.8	0.5284	2.618 ₁₅	0.3820 ₂₁	174
175	310.65 ₄₇	343.0	1195.0	852.0	768.2	83.8	0.5290	2.603 ₁₄	0.3841 ₂₁	175
176	311.12 ₄₇	343.5	1195.1	851.6	767.8	83.8	0.5296	2.589 ₁₄	0.3862 ₂₁	176
177	311.59 ₄₆	344.0	1195.3	851.3	767.5	83.8	0.5302	2.575 ₁₄	0.3883 ₂₁	177
178	312.05 ₄₆	344.4	1195.4	851.0	767.1	83.9	0.5308	2.561 ₁₃	0.3904 ₂₁	178
179	312.51 ₄₆	344.9	1195.6	850.7	766.8	83.9	0.5313	2.548 ₁₃	0.3925 ₂₀	179
180	312.97 ₄₆	345.4	1195.7	850.3	766.4	83.9	0.5319	2.535 ₁₃	0.3945 ₂₁	180
181	313.43 ₄₅	345.9	1195.9	850.0	766.1	83.9	0.5325	2.522 ₁₄	0.3966 ₂₁	181
182	313.88 ₄₅	346.4	1196.0	849.6	765.6	84.0	0.5331	2.508 ₁₃	0.3987 ₂₁	182
183	314.33 ₄₅	346.8	1196.1	849.3	765.3	84.0	0.5336	2.495 ₁₃	0.4008 ₂₁	183
184	314.78 ₄₅	347.3	1196.2	848.9	764.9	84.0	0.5342	2.482 ₁₂	0.4029 ₂₀	184
185	315.23 ₄₅	347.8	1196.4	848.6	764.6	84.0	0.5347	2.470 ₁₃	0.4049 ₂₁	185
186	315.68 ₄₄	348.2	1196.5	848.3	764.3	84.0	0.5353	2.457 ₁₂	0.4070 ₂₀	186
187	316.12 ₄₄	348.7	1196.6	847.9	763.8	84.1	0.5359	2.445 ₁₃	0.4090 ₂₁	187
188	316.56 ₄₄	349.2	1196.8	847.6	763.5	84.1	0.5364	2.432 ₁₂	0.4111 ₂₁	188
189	317.00 ₄₄	349.6	1196.9	847.3	763.2	84.1	0.5370	2.420 ₁₂	0.4132 ₂₁	189
190	317.44 ₄₄	350.1	1197.1	847.0	762.9	84.1	0.5375	2.408 ₁₂	0.4153 ₂₁	190
191	317.88 ₄₄	350.5	1197.2	846.7	762.5	84.2	0.5381	2.396 ₁₁	0.4174 ₂₀	191
192	318.32 ₄₃	351.0	1197.3	846.3	762.1	84.2	0.5386	2.385 ₁₂	0.4194 ₂₁	192
193	318.75 ₄₃	351.4	1197.4	846.0	761.8	84.2	0.5391	2.373 ₁₂	0.4215 ₂₁	193

SATURATED STEAM—Continued.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY.	Pressure, Pounds per Square Inch.
									Weight, in Pounds, of Cubic Foot.	
194	379.18	351.0	1197.6	845.7	761.5	84.2	0.5307	2.301 ₁₂	0.429 ₂₁	194
195	379.61 ₄₃	352.4	1197.7	845.3	761.1	84.2	0.5402	2.349 ₁₂	0.4257 ₂₁	195
196	380.04 ₄₃	352.8	1197.8	845.0	760.8	84.2	0.5408	2.337 ₁₂	0.427 ₂₁	196
197	380.47 ₄₂	353.3	1198.0	844.7	760.4	84.3	0.5413	2.325 ₁₁	0.423 ₂₀	197
198	380.89 ₄₂	353.7	1198.1	844.4	760.1	84.3	0.5418	2.314 ₁₀	0.431 ₂₀	198
199	381.31 ₄₂	354.1	1198.2	844.1	759.8	84.3	0.5423	2.304 ₁₀	0.432 ₂₁	199
200	381.73 ₄₂	354.6	1198.4	843.8	759.5	84.3	0.5429	2.294 ₁₀	0.433 ₂₀	200
201	382.15 ₄₂	355.0	1198.5	843.5	759.1	84.4	0.5434	2.284 ₁₀	0.4379 ₂₀	201
202	382.57 ₄₂	355.4	1198.6	843.2	758.8	84.4	0.5439	2.274 ₁₁	0.439 ₂₀	202
203	382.99 ₄₂	355.9	1198.8	842.9	758.5	84.4	0.5444	2.263 ₁₁	0.443 ₂₁	203
204	383.41 ₄₁	356.3	1198.9	842.6	758.2	84.4	0.5449	2.252 ₁₁	0.4441 ₂₀	204
205	383.82 ₄₁	356.8	1199.0	842.2	757.8	84.4	0.5454	2.241 ₁₀	0.4491 ₂₁	205
206	384.23 ₄₁	357.2	1199.1	841.9	757.4	84.5	0.5459	2.231 ₁₀	0.448 ₂₁	206
207	384.64 ₄₁	357.6	1199.3	841.7	757.2	84.5	0.5465	2.221 ₁₀	0.450 ₂₁	207
208	385.05 ₄₁	358.0	1199.4	841.4	756.9	84.5	0.5470	2.211 ₁₁	0.4524 ₂₁	208
209	385.46 ₄₁	358.5	1199.5	841.0	756.5	84.5	0.5475	2.200 ₁₀	0.4544 ₂₁	209
210	385.87 ₄₁	358.9	1199.6	840.7	756.2	84.5	0.5480	2.190 ₁₀	0.4565 ₂₁	210
211	386.28 ₄₀	359.3	1199.8	840.5	756.0	84.5	0.5485	2.180 ₉	0.458 ₂₁	211
212	386.68 ₄₀	359.7	1199.9	840.2	755.6	84.6	0.5489	2.171 ₉	0.4607 ₂₁	212
213	387.08 ₄₀	360.1	1200.0	839.9	755.3	84.6	0.5494	2.162 ₁₀	0.4627 ₂₁	213
214	387.48 ₄₀	360.6	1200.1	839.5	754.9	84.6	0.5499	2.152 ₁₀	0.4648 ₂₁	214
215	387.88 ₄₀	361.0	1200.2	839.2	754.6	84.6	0.5504	2.142 ₁₀	0.4668 ₂₁	215
216	388.28 ₃₉	361.4	1200.4	839.0	754.4	84.6	0.5509	2.132 ₉	0.4689 ₂₁	216
217	388.67 ₃₉	361.8	1200.5	838.7	754.1	84.6	0.5514	2.123 ₉	0.4711 ₂₀	217
218	389.06 ₃₉	362.2	1200.6	838.4	753.8	84.6	0.5519	2.114 ₉	0.4731 ₂₀	218
219	389.45 ₃₉	362.6	1200.7	838.1	753.4	84.7	0.5524	2.105 ₉	0.4751 ₂₁	219
220	389.84 ₃₉	363.0	1200.8	837.8	753.1	84.7	0.5529	2.096 ₉	0.4772 ₂₀	220
221	390.23 ₃₉	363.5	1201.0	837.5	752.8	84.7	0.5533	2.087 ₉	0.4792 ₂₁	221
222	390.62 ₃₉	363.9	1201.1	837.2	752.5	84.7	0.5538	2.078 ₉	0.4813 ₂₁	222
223	391.01 ₃₉	364.3	1201.2	836.9	752.2	84.7	0.5543	2.069 ₉	0.4834 ₂₁	223
224	391.40 ₃₉	364.7	1201.3	836.6	751.9	84.7	0.5548	2.060 ₉	0.4855 ₂₁	224
225	391.79 ₃₈	365.1	1201.4	836.3	751.6	84.7	0.5553	2.051 ₉	0.4876 ₂₁	225
226	392.17 ₃₈	365.5	1201.6	836.1	751.3	84.8	0.5557	2.042 ₈	0.4896 ₂₁	226
227	392.55 ₃₈	365.9	1201.7	835.8	751.0	84.8	0.5562	2.034 ₈	0.4917 ₂₀	227
228	392.93 ₃₈	366.3	1201.8	835.5	750.7	84.8	0.5567	2.025 ₈	0.4938 ₂₀	228
229	393.31 ₃₈	366.7	1201.9	835.2	750.4	84.8	0.5571	2.017 ₈	0.4959 ₂₀	229
230	393.69 ₃₈	367.1	1202.0	834.9	750.1	84.8	0.5576	2.009 ₈	0.4979 ₂₁	230
231	394.07 ₃₇	367.5	1202.1	834.6	749.8	84.8	0.5581	2.001 ₉	0.5000 ₂₁	231
232	394.45 ₃₇	367.9	1202.2	834.3	749.5	84.8	0.5585	1.992 ₉	0.5021 ₂₁	232
233	394.83 ₃₇	368.3	1202.4	834.1	749.2	84.9	0.5590	1.984 ₈	0.5041 ₂₁	233

SATURATED STEAM—Continued.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY, Weight, in Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
<i>p</i>	<i>t</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>ρ</i>	<i>A</i> _{pu}	$\int \frac{cdT}{T}$	<i>s</i>	<i>γ</i>	<i>p</i>
234	305.19 ₃₇	368.6	1202.5	833.9	749.0	84.9	0.5594	1.976 ₈	0.5062 ₂₀	234
235	305.56 ₃₇	369.0	1202.6	833.6	748.7	84.9	0.5599	1.968 ₈	0.5082 ₂₁	235
236	305.93 ₃₇	369.4	1202.7	833.3	748.4	84.9	0.5603	1.960 ₈	0.5103 ₂₀	236
237	306.30 ₃₇	369.8	1202.8	833.0	748.1	84.9	0.5608	1.952 ₈	0.5123 ₂₁	237
238	306.67 ₃₇	370.2	1202.9	832.7	747.8	84.9	0.5612	1.944 ₈	0.5144 ₂₁	238
239	307.04 ₃₇	370.6	1203.0	832.4	747.5	84.9	0.5617	1.936 ₈	0.5165 ₂₁	239
240	307.41 ₃₆	371.0	1203.2	832.2	747.3	84.9	0.5621	1.928 ₇	0.5186 ₂₀	240
241	307.77 ₃₆	371.3	1203.3	832.0	747.0	85.0	0.5626	1.921 ₈	0.5206 ₂₀	241
242	308.13 ₃₆	371.7	1203.4	831.7	746.7	85.0	0.5630	1.913 ₇	0.5226 ₂₁	242
243	308.49 ₃₆	372.1	1203.5	831.4	746.4	85.0	0.5635	1.906 ₈	0.5247 ₂₁	243
244	308.85 ₃₆	372.5	1203.6	831.1	746.1	85.0	0.5639	1.898 ₇	0.5268 ₂₁	244
245	309.21 ₃₆	372.8	1203.7	830.9	745.9	85.0	0.5643	1.891 ₇	0.5289 ₂₂	245
246	309.57 ₃₆	373.2	1203.8	830.6	745.6	85.0	0.5648	1.883 ₈	0.5311 ₂₁	246
247	309.93 ₃₆	373.6	1203.9	830.3	745.3	85.0	0.5652	1.875 ₇	0.5332 ₂₁	247
248	400.26 ₃₅	374.0	1204.0	830.0	745.0	85.0	0.5656	1.868 ₇	0.5353 ₂₀	248
249	400.64 ₃₅	374.3	1204.1	829.8	744.8	85.0	0.5661	1.861 ₇	0.5373 ₂₀	249
250	400.99 ₃₅	374.7	1204.2	829.5	744.5	85.0	0.5665	1.854 ₇	0.5393 ₂₀	250
251	401.34 ₃₅	375.1	1204.4	829.3	744.2	85.1	0.5669	1.847 ₇	0.5413 ₂₀	251
252	401.69 ₃₅	375.4	1204.5	829.1	744.0	85.1	0.5673	1.840 ₇	0.5433 ₂₁	252
253	402.04 ₃₅	375.8	1204.6	828.8	743.7	85.1	0.5678	1.833 ₇	0.5454 ₂₁	253
254	402.39 ₃₅	376.2	1204.7	828.5	743.4	85.1	0.5682	1.826 ₇	0.5475 ₂₁	254
255	402.74 ₃₅	376.5	1204.8	828.3	743.2	85.1	0.5686	1.819 ₇	0.5496 ₂₁	255
256	403.09 ₃₅	376.9	1204.9	828.0	742.9	85.1	0.5690	1.812 ₇	0.5517 ₂₁	256
257	403.44 ₃₅	377.3	1205.0	827.7	742.6	85.1	0.5695	1.805 ₇	0.5538 ₂₁	257
258	403.79 ₃₄	377.6	1205.1	827.5	742.4	85.1	0.5699	1.798 ₆	0.5559 ₂₁	258
259	404.13 ₃₄	378.0	1205.2	827.2	742.1	85.1	0.5703	1.792 ₇	0.5580 ₂₁	259
260	404.47 ₃₄	378.4	1205.3	826.9	741.7	85.2	0.5707	1.785 ₆	0.5601 ₂₀	260
261	404.81 ₃₄	378.7	1205.4	826.7	741.5	85.2	0.5711	1.779 ₆	0.5621 ₂₁	261
262	405.15 ₃₄	379.1	1205.5	826.4	741.2	85.2	0.5715	1.773 ₆	0.5642 ₂₁	262
263	405.49 ₃₄	379.4	1205.6	826.2	741.0	85.2	0.5719	1.766 ₇	0.5663 ₂₁	263
264	405.83 ₃₄	379.8	1205.7	825.9	740.7	85.2	0.5724	1.759 ₆	0.5684 ₂₁	264
265	406.17 ₃₄	380.2	1205.8	825.6	740.4	85.2	0.5728	1.753 ₇	0.5705 ₂₁	265
266	406.51 ₃₃	380.5	1205.9	825.4	740.2	85.2	0.5732	1.746 ₆	0.5726 ₂₀	266
267	406.84 ₃₄	380.8	1206.0	825.2	740.0	85.2	0.5736	1.740 ₆	0.5746 ₂₁	267
268	407.18 ₃₄	381.2	1206.1	824.9	739.7	85.2	0.5740	1.734 ₆	0.5767 ₂₁	268
269	407.52 ₃₃	381.5	1206.2	824.7	739.5	85.2	0.5744	1.728 ₆	0.5788 ₂₁	269
270	407.85 ₃₃	381.9	1206.3	824.4	739.2	85.2	0.5748	1.722 ₆	0.5809 ₂₀	270
271	408.18 ₃₃	382.2	1206.4	824.2	739.0	85.2	0.5752	1.716 ₇	0.5829 ₂₁	271
272	408.51 ₃₃	382.6	1206.5	823.9	738.6	85.3	0.5756	1.709 ₇	0.5850 ₂₁	272
273	408.84 ₃₃	382.9	1206.6	823.7	738.4	85.3	0.5760	1.703 ₆	0.5871 ₂₁	273

SATURATED STEAM—Continued.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Efficiency of the Liquid.	Specific Volume.	Density.	
									Weight, Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
274	400.17 ₃₃	383.3	1200.7	823.4	738.1	85.3	0.5764	1.007 ₆	0.5802 ₂₁	274
275	400.50 ₃₃	383.6	1200.8	823.2	737.9	85.3	0.5768	1.001 ₆	0.5813 ₂₁	275
276	400.83 ₃₃	384.0	1200.9	822.9	737.6	85.3	0.5772	1.005 ₆	0.5824 ₂₁	276
277	410.10 ₃₂	384.3	1207.0	822.7	737.4	85.3	0.5776	1.079 ₆	0.5855 ₂₁	277
278	410.48 ₃₂	384.6	1207.1	822.5	737.2	85.3	0.5779	1.075 ₆	0.5870 ₂₁	278
279	410.80 ₃₂	385.0	1207.2	822.2	736.9	85.3	0.5783	1.068 ₆	0.5897 ₂₁	279
280	411.12 ₃₃	385.3	1207.3	822.0	736.7	85.3	0.5787	1.092 ₆	0.6002 ₂	280
281	411.44 ₃₂	385.6	1207.4	821.8	736.5	85.3	0.5791	1.056 ₆	0.604 ₂	281
282	411.76 ₃₂	386.0	1207.5	821.5	736.2	85.3	0.5795	1.050 ₆	0.606 ₂	282
283	412.08 ₃₂	386.3	1207.6	821.3	736.0	85.3	0.5799	1.045 ₆	0.608 ₂	283
284	412.40 ₃₂	386.6	1207.7	821.1	735.8	85.3	0.5803	1.030 ₆	0.610 ₂	284
285	412.72 ₃₂	387.0	1207.8	820.8	735.5	85.3	0.5806	1.034 ₆	0.612 ₂	285
286	413.04 ₃₂	387.3	1207.9	820.6	735.3	85.3	0.5810	1.028 ₆	0.614 ₂	286
287	413.36 ₃₂	387.7	1208.0	820.3	735.0	85.3	0.5814	1.023 ₆	0.616 ₂	287
288	413.68 ₃₂	388.0	1208.1	820.1	734.7	85.4	0.5818	1.017 ₆	0.618 ₂	288
289	414.00 ₃₂	388.3	1208.2	819.9	734.5	85.4	0.5822	1.012 ₆	0.620 ₂	289
290	414.32 ₃₁	388.6	1208.3	819.7	734.3	85.4	0.5826	1.007 ₆	0.622 ₃	290
291	414.63 ₃₁	389.0	1208.4	819.4	734.0	85.4	0.5829	1.001 ₆	0.625 ₂	291
292	414.94 ₃₁	389.3	1208.5	819.2	733.8	85.4	0.5833	1.000 ₆	0.627 ₂	292
293	415.25 ₃₁	389.6	1208.6	819.0	733.6	85.4	0.5837	1.501 ₆	0.629 ₂	293
294	415.56 ₃₁	390.0	1208.7	818.7	733.3	85.4	0.5840	1.585 ₆	0.631 ₂	294
295	415.87 ₃₁	390.3	1208.8	818.5	733.1	85.4	0.5844	1.580 ₆	0.633 ₂	295
296	416.18 ₃₁	390.6	1208.9	818.3	732.9	85.4	0.5848	1.575 ₆	0.635 ₂	296
297	416.49 ₃₁	390.9	1209.0	818.1	732.7	85.4	0.5851	1.570 ₆	0.637 ₂	297
298	416.80 ₃₁	391.3	1209.1	817.8	732.4	85.4	0.5855	1.564 ₆	0.639 ₂	298
299	417.11 ₃₁	391.6	1209.2	817.6	732.2	85.4	0.5859	1.559 ₆	0.641 ₃	299
300	417.42 ₃₀	391.9	1209.3	817.4	732.0	85.4	0.5863	1.554 ₆	0.644 ₂	300
301	417.72 ₃₀	392.2	1209.3	817.1	731.7	85.4	0.5866	1.549 ₆	0.646 ₂	301
302	418.02 ₃₀	392.5	1209.4	816.9	731.5	85.4	0.5870	1.544 ₆	0.648 ₂	302
303	418.32 ₃₀	392.8	1209.5	816.7	731.3	85.4	0.5873	1.539 ₆	0.650 ₂	303
304	418.62 ₃₀	393.2	1209.6	816.4	731.0	85.4	0.5877	1.534 ₆	0.652 ₃	304
305	418.92 ₃₀	393.5	1209.7	816.2	730.8	85.4	0.5880	1.529 ₆	0.654 ₃	305
306	419.22 ₃₀	393.8	1209.8	816.0	730.6	85.4	0.5884	1.524 ₆	0.656 ₂	306
307	419.52 ₃₀	394.1	1209.9	815.8	730.4	85.4	0.5888	1.520 ₆	0.658 ₃	307
308	419.82 ₃₀	394.4	1210.0	815.6	730.2	85.4	0.5891	1.515 ₆	0.660 ₃	308
309	420.12 ₃₀	394.7	1210.1	815.4	730.0	85.4	0.5895	1.510 ₆	0.662 ₂	309
310	420.42 ₃₀	395.0	1210.2	815.2	729.8	85.4	0.5898	1.505 ₆	0.664 ₂	310
311	420.72 ₃₀	395.4	1210.3	814.9	729.5	85.4	0.5902	1.500 ₆	0.666 ₂	311
312	421.02 ₃₀	395.7	1210.4	814.7	729.3	85.4	0.5905	1.496 ₆	0.668 ₃	312
313	421.32 ₃₀	396.0	1210.4	814.4	729.0	85.4	0.5909	1.491 ₆	0.671 ₃	313

SATURATED STEAM--Continued.

Pressure, Pounds per Square Inch.	Temperature, Degrees Fahr.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY.	
									Weight, in Pounds, of one Cubic Foot.	Pressure, Pounds per Square Inch.
314	421.62 ₃₀	396.3	1210.5	814.2	728.7	85.5	0.5913	1.486 ₅	0.673 ₂	314
315	421.92 ₂₉	396.6	1210.6	814.0	728.5	85.5	0.5916	1.481 ₅	0.675 ₂	315
316	422.21 ₂₉	396.9	1210.7	813.8	728.3	85.5	0.5919	1.477 ₅	0.677 ₂	316
317	422.50 ₂₉	397.2	1210.8	813.6	728.1	85.5	0.5923	1.472 ₄	0.679 ₂	317
318	422.79 ₂₉	397.5	1210.9	813.4	727.9	85.5	0.5926	1.468 ₄	0.681 ₂	318
319	423.08 ₂₉	397.8	1211.0	813.2	727.7	85.5	0.5930	1.464 ₅	0.683 ₂	319
320	423.37 ₂₉	398.1	1211.1	813.0	727.5	85.5	0.5933	1.459 ₅	0.685 ₃	320
321	423.66 ₂₉	398.4	1211.2	812.8	727.3	85.5	0.5937	1.454 ₄	0.688 ₂	321
322	423.95 ₂₉	398.7	1211.2	812.5	727.0	85.5	0.5940	1.450 ₄	0.690 ₂	322
323	424.24 ₂₉	399.0	1211.3	812.3	726.8	85.5	0.5944	1.445 ₄	0.692 ₂	323
324	424.53 ₂₉	399.3	1211.4	812.1	726.6	85.5	0.5947	1.441 ₄	0.694 ₂	324
325	424.82 ₂₈	399.6	1211.5	811.9	726.4	85.5	0.5950	1.437 ₄	0.696 ₂	325
326	425.10 ₂₈	399.9	1211.6	811.7	726.2	85.5	0.5954	1.432 ₄	0.698 ₂	326
327	425.38 ₂₉	400.2	1211.7	811.5	726.0	85.5	0.5957	1.428 ₄	0.700 ₂	327
328	425.67 ₂₉	400.5	1211.8	811.3	725.8	85.5	0.5960	1.424 ₄	0.702 ₂	328
329	425.96 ₂₈	400.8	1211.9	811.1	725.6	85.5	0.5964	1.420 ₅	0.704 ₃	329
330	426.24 ₂₈	401.1	1211.9	810.8	725.3	85.5	0.5967	1.415 ₄	0.707 ₂	330
331	426.52 ₂₈	401.4	1212.0	810.6	725.1	85.5	0.5970	1.411 ₄	0.709 ₂	331
332	426.80 ₂₈	401.7	1212.1	810.4	724.9	85.5	0.5974	1.407 ₄	0.711 ₂	332
333	427.08 ₂₈	402.0	1212.2	810.2	724.7	85.5	0.5977	1.403 ₄	0.713 ₂	333
334	427.36 ₂₈	402.3	1212.3	810.0	724.5	85.5	0.5980	1.399 ₄	0.715 ₂	334
335	427.64 ₂₈	402.6	1212.4	809.8	724.3	85.5	0.5984	1.395 ₄	0.717 ₂	335
336	427.92 ₂₈	402.9	1212.5	809.6	724.1	85.5	0.5987	1.391 ₄	0.719 ₂	336

TABLE III.
SATURATED STEAM.

FRENCH UNITS.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.		Temperature, Degrees Centi- grade.
									Weight, in Kilom. of one Cubic Meter.		
0	4.602 ₃₃₀	0.000	606.5	606.5	575.5	31.0	0.00000	211.5 ₁₃₈	0.004730 ₃₂₇		0
1	4.941 ₃₆₂	1.007	606.8	605.8	574.7	31.1	0.00067	197.7 ₁₃₁	0.005057 ₃₀₀		1
2	5.303 ₃₈₆	2.014	607.1	605.1	573.9	31.2	0.00733	184.6 ₁₂₂	0.005417 ₂₈₃		2
3	5.680 ₄₁₁	3.022	607.4	604.4	573.2	31.2	0.01068	172.4 ₁₁₂	0.005800 ₄₀₃		3
4	6.100 ₄₃₆	4.029	607.7	603.7	572.4	31.3	0.01461	161.2 ₁₀₄	0.006203 ₄₂₇		4
5	6.536 ₄₆₅	5.036	608.0	603.0	571.6	31.4	0.01823	150.8 ₉₆	0.006630 ₄₅₀		5
6	7.001 ₄₉₃	6.040	608.3	602.3	570.8	31.5	0.02183	141.2 ₉₀	0.007080 ₄₈₁		6
7	7.494 ₅₂₅	7.045	608.6	601.6	570.0	31.6	0.02542	132.2 ₈₃	0.007561 ₅₀₈		7
8	8.019 ₅₅₇	8.049	608.9	600.9	569.3	31.6	0.02890	123.9 ₇₇	0.008060 ₅₃₉		8
9	8.576 ₅₉₁	9.054	609.2	600.1	568.4	31.7	0.03255	116.2 ₇₂	0.008608 ₅₆₉		9
10	9.167 ₆₂₈	10.058	609.6	599.5	567.7	31.8	0.03609	109.0 ₆₇	0.009177 ₆₀₂		10
11	9.795 ₆₆₅	11.060	609.9	598.8	566.9	31.9	0.03962	102.3 ₆₂	0.009779 ₆₃₁		11
12	10.460 ₇₀₄	12.061	610.2	598.1	566.1	32.0	0.04313	96.00 ₅₈₀	0.01041 ₆₇		12
13	11.164 ₇₄₇	13.063	610.5	597.4	565.3	32.1	0.04663	90.19 ₅₄₃	0.01108 ₇₁		13
14	11.911 ₇₉₁	14.064	610.8	596.7	564.5	32.2	0.05012	84.76 ₅₀₇	0.01179 ₇₆		14
15	12.702 ₈₃₇	15.066	611.1	596.0	563.8	32.2	0.05350	79.69 ₄₇₂	0.01255 ₇₉		15
16	13.539 ₈₈₄	16.066	611.4	595.3	563.0	32.3	0.05705	74.97 ₄₄₁	0.01334 ₈₃		16
17	14.423 ₉₃₇	17.066	611.7	594.6	562.2	32.4	0.06050	70.56 ₄₁₂	0.01417 ₈₈		17
18	15.360 ₉₈₀	18.066	612.0	593.9	561.4	32.5	0.06390	66.44 ₃₈₀	0.01505 ₉₃		18
19	16.349 ₁₀₄₆	19.066	612.3	593.2	560.6	32.6	0.06735	62.58 ₃₆₀	0.01598 ₉₇		19
20	17.395 ₁₁₀₃	20.066	612.6	592.5	559.8	32.7	0.07076	58.98 ₃₃₇	0.01695 ₁₀₃		20
21	18.498 ₁₁₆₅	21.064	612.9	591.8	559.0	32.8	0.07415	55.61 ₃₁₅	0.01798 ₁₀₈		21
22	19.663 ₁₂₂₀	22.063	613.2	591.1	558.2	32.9	0.07754	52.46 ₂₉₅	0.01906 ₁₁₄		22
23	20.892 ₁₂₉₀	23.061	613.5	590.4	557.5	32.9	0.08091	49.51 ₂₇₇	0.02020 ₁₁₉		23
24	22.188 ₁₃₆₆	24.059	613.8	589.7	556.7	33.0	0.08427	46.74 ₂₅₉	0.02139 ₁₂₆		24
25	23.554 ₁₄₄₀	25.058	614.1	589.0	555.9	33.1	0.08762	44.15 ₂₄₃	0.02265 ₁₃₂		25
26	24.994 ₁₅₁₆	26.053	614.4	588.3	555.1	33.2	0.09094	41.72 ₂₂₇	0.02397 ₁₃₈		26
27	26.510 ₁₅₉₇	27.048	614.7	587.7	554.4	33.3	0.09426	39.45 ₂₁₄	0.02535 ₁₄₅		27
28	28.107 ₁₆₇₉	28.042	615.0	587.0	553.6	33.4	0.09756	37.31 ₂₀₁	0.02680 ₁₅₃		28
29	29.780 ₁₇₆₇	29.037	615.3	586.3	552.8	33.5	0.10085	35.30 ₁₈₈	0.02833 ₁₅₉		29
30	31.553 ₁₈₅₈	30.032	615.7	585.7	552.1	33.6	0.10413	33.42 ₁₇₇	0.02992 ₁₆₈		30

SATURATED STEAM—Continued.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY. Weight, in Kilow, of one Cubic Meter.	Temperature, Degrees Centi- grade.
<i>t</i>	<i>p</i>	<i>q</i>	<i>λ</i>	<i>r</i>	<i>ρ</i>	<i>A</i> _{pu}	$\int \frac{cdt}{T}$	<i>s</i>	<i>γ</i>	<i>t</i>
31	33.411 ¹⁰⁵³	31.027	616.0	585.0	551.3	33.7	0.10740	31.65 ¹⁶⁷	0.03160	31
32	35.364 ²⁰⁵²	32.023	616.3	584.3	550.5	33.8	0.11067	29.98 ¹⁵⁶	0.03335 ¹⁷⁵	32
33	37.416 ²¹⁵⁵	33.018	616.6	583.6	549.7	33.9	0.11392	28.42 ¹⁴⁸	0.03510 ¹⁸⁴	33
34	39.571 ²²⁶²	34.014	616.9	582.9	548.9	34.0	0.11716	26.94 ¹³⁸	0.03712 ²⁰¹	34
35	41.833 ²³⁷⁴	35.009	617.2	582.2	548.2	34.0	0.12039	25.56 ¹³¹	0.03913 ²¹¹	35
36	44.207 ²⁴⁰⁰	36.007	617.5	581.5	547.4	34.1	0.12362	24.25 ¹²³	0.04124 ²²⁰	36
37	46.697 ²⁶¹¹	37.005	617.8	580.8	546.6	34.2	0.12683	23.02 ¹¹⁶	0.04344 ²³⁰	37
38	49.308 ²⁷⁴²	38.004	618.1	580.1	545.8	34.3	0.13004	21.86 ¹⁰⁹	0.04574 ²⁴¹	38
39	52.05 ²⁸⁶	39.002	618.4	579.4	545.0	34.4	0.13324	20.77 ¹⁰³	0.04815 ²⁵¹	39
40	54.91 ³⁰¹	40.0	618.7	578.7	544.2	34.5	0.1364	19.74 ⁹⁸	0.05066 ²⁶³	40
41	57.92 ³¹⁴	41.0	619.0	578.0	543.4	34.6	0.1396	18.76 ⁹²	0.05329 ²⁷⁵	41
42	61.06 ³²⁹	42.0	619.3	577.3	542.6	34.7	0.1428	17.84 ⁸⁶	0.05604 ²⁸⁵	42
43	64.35 ³⁴⁵	43.0	619.6	576.6	541.8	34.8	0.1459	16.98 ⁸²	0.05889 ²⁹⁸	43
44	67.80 ³⁶⁰	44.0	619.9	575.9	541.0	34.9	0.1491	16.16 ⁷⁷	0.06187 ³¹⁰	44
45	71.40 ³⁷⁶	45.0	620.2	575.2	540.2	35.0	0.1522	15.39 ⁷³	0.06497 ³²⁵	45
46	75.16 ³⁹⁴	46.0	620.5	574.5	539.4	35.1	0.1554	14.66 ⁶⁹	0.06822 ³³⁸	46
47	79.10 ⁴¹¹	47.0	620.8	573.8	538.6	35.2	0.1585	13.97 ⁶⁶	0.07160 ³⁵²	47
48	83.21 ⁴³⁰	48.0	621.1	573.1	537.8	35.3	0.1617	13.31 ⁶²	0.07512 ³⁶⁶	48
49	87.51 ⁴⁴⁷	49.0	621.4	572.4	537.0	35.4	0.1648	12.69 ⁵⁸	0.07878 ³⁸¹	49
50	91.98 ⁴⁶⁷	50.0	621.8	571.8	536.3	35.5	0.1679	12.11 ⁵⁵	0.08259 ³⁹⁴	50
51	96.65 ⁴⁸⁹	51.0	622.1	571.1	535.5	35.6	0.1710	11.56 ⁵³	0.08653 ⁴¹⁶	51
52	101.54 ⁵¹⁰	52.1	622.4	570.3	534.6	35.7	0.1741	11.03 ⁵⁰	0.09069 ⁴²⁸	52
53	106.64 ⁵³¹	53.1	622.7	569.6	533.8	35.8	0.1772	10.53 ⁴⁷	0.09497 ⁴⁴³	53
54	111.95 ⁵⁵⁴	54.1	623.0	568.9	533.0	35.9	0.1803	10.06 ⁴⁵	0.09940 ⁴⁷⁰	54
55	117.49 ⁵⁷⁶	55.1	623.3	568.2	532.2	36.0	0.1833	9.610 ⁴²⁵	0.1041 ⁴⁸	55
56	123.25 ⁶⁰¹	56.1	623.6	567.5	531.4	36.1	0.1864	9.185 ⁴⁰³	0.1089 ⁵⁰	56
57	129.26 ⁶²⁵	57.1	623.9	566.8	530.7	36.1	0.1895	8.782 ³⁸³	0.1139 ⁵²	57
58	135.51 ⁶⁵¹	58.1	624.2	566.1	529.9	36.2	0.1925	8.399 ³⁶³	0.1191 ⁵⁴	58
59	142.02 ⁶⁷⁸	59.1	624.5	565.4	529.1	36.3	0.1956	8.036 ³⁴⁹	0.1245 ⁵⁶	59
60	148.80 ⁷⁰⁵	60.1	624.8	564.7	528.3	36.4	0.1986	7.687 ³²⁵	0.1301 ⁵⁷	60
61	155.85 ⁷³³	61.1	625.1	564.0	527.5	36.5	0.2016	7.362 ³¹¹	0.1358 ⁶⁰	61
62	163.18 ⁷⁶²	62.1	625.4	563.3	526.7	36.6	0.2046	7.051 ²⁹⁷	0.1418 ⁶³	62
63	170.80 ⁷⁹²	63.1	625.7	562.6	525.9	36.7	0.2076	6.754 ²⁸⁴	0.1481 ⁶⁵	63
64	178.72 ⁸²³	64.2	626.0	561.8	525.0	36.8	0.2106	6.470 ²⁶⁹	0.1546 ⁶⁷	64
65	186.95 ⁸⁵⁵	65.2	626.3	561.1	524.2	36.9	0.2136	6.201 ²⁵⁴	0.1613 ⁶⁹	65
66	195.50 ⁸⁸⁸	66.2	626.6	560.4	523.4	37.0	0.2166	5.947 ²⁴²	0.1682 ⁷¹	66
67	204.38 ⁹²²	67.2	626.9	559.7	522.6	37.1	0.2196	5.705 ²³³	0.1753 ⁷⁴	67
68	213.60 ⁹⁵⁷	68.2	627.2	559.0	521.8	37.2	0.2225	5.472 ²²²	0.1827 ⁷⁸	68
69	223.17 ⁹⁹²	69.2	627.5	558.3	521.0	37.3	0.2254	5.250 ²¹⁰	0.1905 ⁸⁰	69
70	233.09 ¹⁰³⁰	70.2	627.9	557.7	520.3	37.4	0.2284	5.040 ²⁰¹	0.1985 ⁸²	70

SATURATED STEAM — Continued.

Temperature, Degrees Cent. grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.		Temperature, Degrees Cent. grade.
									Weight, in Kilograms, of one Cubic Meter.		
71	243.39	1068	628.2	557.0	519.5	37.5	0.2313	4.839	0.2067		71
72	254.07	1107	628.5	556.3	518.7	37.6	0.2342	4.648	0.2151		72
73	265.14	1148	628.8	555.6	517.9	37.7	0.2371	4.465	0.2233		73
74	276.62	1189	629.1	554.9	517.1	37.8	0.2400	4.291	0.2313		74
75	288.51	1232	629.4	554.2	516.3	37.9	0.2429	4.124	0.2395		75
76	300.83	1276	629.7	553.5	515.5	38.0	0.2458	3.965	0.2477		76
77	313.50	1321	630.0	552.7	514.6	38.1	0.2487	3.815	0.2558		77
78	326.80	1368	630.3	552.0	513.8	38.2	0.2516	3.668	0.2639		78
79	340.48	1415	630.6	551.3	513.0	38.3	0.2544	3.529	0.2720		79
80	354.63	1464	630.9	550.6	512.3	38.3	0.2573	3.397	0.2804		80
81	369.27	1514	631.2	549.9	511.5	38.4	0.2601	3.270	0.2888		81
82	384.41	1567	631.5	549.2	510.7	38.5	0.2630	3.149	0.2976		82
83	400.08	1619	631.8	548.5	509.9	38.6	0.2658	3.033	0.3063		83
84	416.27	1674	632.1	547.8	509.1	38.7	0.2686	2.922	0.3151		84
85	433.01	1730	632.4	547.1	508.3	38.8	0.2714	2.815	0.3242		85
86	450.31	1787	632.7	546.4	507.5	38.9	0.2742	2.714	0.3333		86
87	468.18	1846	633.0	545.7	506.7	39.0	0.2770	2.616	0.3427		87
88	486.64	1907	633.3	545.0	505.9	39.1	0.2798	2.523	0.3522		88
89	505.71	1969	633.6	544.2	505.0	39.2	0.2826	2.433	0.4111		89
90	525.40	2032	634.0	543.6	504.3	39.3	0.2854	2.347	0.4200		90
91	545.72	2098	634.3	542.9	503.6	39.3	0.2881	2.265	0.4415		91
92	566.70	2164	634.6	542.2	502.8	39.4	0.2909	2.186	0.4575		92
93	588.34	2233	634.9	541.5	502.0	39.5	0.2937	2.110	0.4739		93
94	610.67	2303	635.2	540.8	501.2	39.6	0.2964	2.038	0.4905		94
95	633.70	2375	635.5	540.1	500.4	39.7	0.2991	1.968	0.5081		95
96	657.45	2448	635.8	539.4	499.6	39.8	0.3019	1.901	0.5261		96
97	681.93	2524	636.1	538.7	498.8	39.9	0.3046	1.836	0.5445		97
98	707.17	2602	636.4	538.0	498.1	39.9	0.3073	1.774	0.5636		98
99	733.19	2681	636.7	537.3	497.3	40.0	0.3100	1.715	0.5831		99
100	760.00	275	637.0	536.6	496.4	40.2	0.3127	1.661	0.6024		100
101	787.5	283	637.3	535.9	495.6	40.3	0.3154	1.609	0.6219		101
102	815.5	292	637.6	535.1	494.7	40.4	0.3181	1.559	0.6427		102
103	845.0	301	637.9	534.4	493.9	40.5	0.3208	1.509	0.6645		103
104	875.1	309	638.2	533.7	493.2	40.5	0.3235	1.459	0.688		104
105	906.0	319	638.5	533.0	492.4	40.6	0.3261	1.409	0.7097		105
106	937.9	328	638.8	532.3	491.6	40.7	0.3288	1.365	0.7355		106
107	970.7	337	639.1	531.6	490.8	40.8	0.3314	1.320	0.7576		107
108	1004.4	347	639.4	530.9	490.1	40.8	0.3341	1.278	0.7825		108
109	1039.1	356	639.7	530.2	489.3	40.9	0.3367	1.248	0.8080		109
110	1074.7	367	640.1	529.6	488.6	41.0	0.3393	1.209	0.8340		110

SATURATED STEAM — Continued.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY. Weight, in Kilos., of one Cubic Meter.	Temperature, Degrees Centi- grade.
<i>t</i>	<i>p</i>	<i>q</i>	<i>λ</i>	<i>r</i>	<i>ρ</i>	<i>Apu</i>	$\int \frac{cdt}{T}$	<i>s</i>	<i>γ</i>	<i>t</i>
111	1111.4	111.5	640.4	528.9	487.8	41.1	0.3420	1.102 ₃₆	0.8008 ₂₇₅	111
112	1149.1 ³⁷⁷	112.5	640.7	528.2	487.0	41.2	0.3446	1.126 ₃₅	0.8883 ₂₈₃	112
113	1187.9 ³⁸⁸	113.5	641.0	527.5	486.3	41.2	0.3471	1.091 ₃₄	0.9160 ₂₉₀	113
114	1227.7 ⁴¹⁰	114.6	641.3	526.7	485.4	41.3	0.3498	1.057 ₃₂	0.9456 ₂₉₉	114
115	1268.7 ⁴²⁰	115.6	641.6	526.0	484.6	41.4	0.3524	1.025 ₃₁	0.9753 ₃₀₅	115
116	1310.7 ⁴³²	116.6	641.9	525.3	483.8	41.5	0.3550	0.994 ₂₉₉	1.006 ₃₁	116
117	1353.9 ⁴⁴⁴	117.6	642.2	524.6	483.1	41.5	0.3576	0.964 ₂₈₉	1.037 ₃₂	117
118	1398.3 ⁴⁵⁵	118.6	642.5	523.9	482.3	41.6	0.3601	0.935 ₂₇₈	1.069 ₃₃	118
119	1443.8 ⁴⁶⁷	119.6	642.8	523.2	481.5	41.7	0.3627	0.907 ₂₆₈	1.102 ₃₃	119
120	1490.5 ⁴⁸⁰	120.6	643.1	522.5	480.7	41.8	0.3653	0.8808 ₂₅₈	1.135 ₃₅	120
121	1538.5 ⁴⁹²	121.6	643.4	521.8	480.0	41.8	0.3678	0.8550 ₂₅₀	1.170 ₃₅	121
122	1587.7 ⁵⁰⁶	122.6	643.7	521.1	479.2	41.9	0.3704	0.8300 ₂₄₁	1.205 ₃₆	122
123	1638.3 ⁵¹⁸	123.6	644.0	520.4	478.4	42.0	0.3729	0.8059 ₂₃₃	1.241 ₃₇	123
124	1690.1 ⁵³²	124.6	644.3	519.7	477.6	42.1	0.3755	0.7826 ₂₂₄	1.278 ₃₇	124
125	1743.3 ⁵⁴⁵	125.6	644.6	519.0	476.8	42.2	0.3780	0.7602 ₂₁₆	1.315 ₃₉	125
126	1797.8 ⁵⁵⁹	126.6	644.9	518.3	476.1	42.2	0.3805	0.7386 ₂₁₁	1.354 ₄₀	126
127	1853.7 ⁵⁷³	127.7	645.2	517.5	475.2	42.3	0.3830	0.7175 ₂₀₃	1.394 ₄₀	127
128	1911.0 ⁵⁸⁷	128.7	645.5	516.8	474.4	42.4	0.3856	0.6973 ₁₉₅	1.434 ₄₁	128
129	1969.7 ⁶⁰¹	129.7	645.8	516.1	473.6	42.5	0.3881	0.6778 ₁₈₇	1.475 ₄₂	129
130	2029.8 ⁶¹⁷	130.7	646.2	515.5	473.0	42.5	0.3906	0.6591 ₁₈₃	1.517 ₄₃	130
131	2091.5 ⁶³³	131.7	646.5	514.8	472.2	42.6	0.3931	0.6408 ₁₇₇	1.560 ₄₅	131
132	2154.8 ⁶⁴⁷	132.7	646.8	514.1	471.4	42.7	0.3955	0.6231 ₁₇₀	1.605 ₄₅	132
133	2219.5 ⁶⁶³	133.7	647.1	513.4	470.6	42.8	0.3980	0.6061 ₁₆₅	1.650 ₄₆	133
134	2285.8 ⁶⁷⁹	134.7	647.4	512.7	469.8	42.9	0.4005	0.5896 ₁₆₀	1.696 ₄₇	134
135	2353.7 ⁶⁹⁵	135.7	647.7	512.0	469.1	42.9	0.4030	0.5736 ₁₅₃	1.743 ₄₈	135
136	2423.2 ⁷¹²	136.7	648.0	511.3	468.3	43.0	0.4054	0.5583 ₁₄₉	1.791 ₄₉	136
137	2494.4 ⁷²⁸	137.7	648.3	510.6	467.5	43.1	0.4079	0.5434 ₁₄₅	1.840 ₅₁	137
138	2567.2 ⁷⁴⁵	138.7	648.6	509.9	466.7	43.2	0.4103	0.5289 ₁₄₀	1.891 ₅₁	138
139	2641.7 ⁷⁶²	139.8	648.9	509.1	465.9	43.2	0.4128	0.5149 ₁₃₆	1.942 ₅₃	139
140	2717.9 ⁷⁸⁰	140.8	649.2	508.4	465.1	43.3	0.4152	0.5013 ₁₃₀	1.995 ₅₃	140
141	2795.9 ⁷⁹⁸	141.8	649.5	507.7	464.3	43.4	0.4177	0.4883 ₁₂₇	2.048 ₅₅	141
142	2875.7 ⁸¹⁶	142.8	649.8	507.0	463.5	43.5	0.4201	0.4756 ₁₂₃	2.105 ₅₅	142
143	2957.3 ⁸³⁵	143.8	650.1	506.3	462.8	43.5	0.4225	0.4632 ₁₁₉	2.158 ₅₇	143
144	3040.8 ⁸⁵³	144.8	650.4	505.6	462.0	43.6	0.4249	0.4514 ₁₁₅	2.215 ₅₈	144
145	3126.1 ⁸⁷²	145.8	650.7	504.9	461.2	43.7	0.4273	0.4399 ₁₁₂	2.273 ₅₉	145
146	3213.3 ⁸⁹²	146.8	651.0	504.2	460.4	43.8	0.4297	0.4287 ₁₀₈	2.332 ₆₀	146
147	3302.5 ⁹¹¹	147.8	651.3	503.5	459.6	43.9	0.4321	0.4179 ₁₀₅	2.392 ₆₂	147
148	3393.6 ⁹³¹	148.8	651.6	502.8	458.9	43.9	0.4325	0.4074 ₁₀₁	2.451 ₆₃	148
149	3486.7 ⁹⁵²	149.8	651.9	502.1	458.1	44.0	0.4369	0.3973 ₉₈	2.517 ₆₄	149
150	3581.9 ⁹⁷²	150.8	652.3	501.5	457.4	44.1	0.4393	0.3875 ₉₆	2.581 ₆₅	150

SATURATED STEAM—Continued.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.		Temperature, Degrees Centi- grade.
									Weight, in Kilos. of one Cubic Meter.		
151	3679.1 ₀₆₃	151.8	652.6	500.8	456.6	44.2	0.4417	0.3779 ₉₈	2.646 ₉₇		151
152	3778.4 ₁₀₁₄	152.9	652.9	500.0	455.8	44.2	0.4440	0.3680 ₉₀	2.715 ₈₅		152
153	3879.8 ₁₀₃₅	153.9	653.2	499.3	455.0	44.3	0.4464	0.3590 ₈₇	2.781 ₈₀		153
154	3983.3 ₁₀₅₇	154.9	653.5	498.6	454.2	44.4	0.4488	0.3500 ₈₅	2.850 ₇₀		154
155	4089.0 ₁₀₇₉	155.9	653.8	497.9	453.4	44.5	0.4511	0.3424 ₈₂	2.920 ₆₂		155
156	4196.9 ₁₁₀₂	156.9	654.1	497.2	452.7	44.5	0.4536	0.3342 ₈₀	2.992 ₅₄		156
157	4307.1 ₁₁₂₄	158.0	654.4	496.4	451.8	44.6	0.4560	0.3262 ₇₈	3.066 ₄₆		157
158	4419.5 ₁₁₄₈	159.0	654.7	495.7	450.0	44.7	0.4584	0.3184 ₇₆	3.141 ₃₈		158
159	4534.3 ₁₁₇₁	160.1	655.0	494.9	449.2	44.7	0.4608	0.3108 ₇₃	3.217 ₆₆		159
160	4651.4 ₁₁₉₅	161.1	655.3	494.2	449.4	44.8	0.4633	0.3035 ₇₁	3.295 ₅₈		160
161	4770.9 ₁₂₁₈	162.2	655.6	493.4	448.5	44.9	0.4657	0.2964 ₆₉	3.374 ₅₀		161
162	4892.7 ₁₂₄₃	163.2	655.9	492.7	447.7	45.0	0.4681	0.2895 ₆₇	3.454 ₄₂		162
163	5017.7 ₁₂₇	164.2	656.2	492.0	447.0	45.0	0.4705	0.2828 ₆₄	3.536 ₃₄		163
164	5144.1 ₁₃₀	165.3	656.5	491.2	446.1	45.1	0.4729	0.2762 ₆₃	3.620 ₂₅		164
165	5273.3 ₁₃₂	166.3	656.8	490.5	445.3	45.2	0.4752	0.2699 ₆₂	3.705 ₁₇		165
166	5405.1 ₁₃₄	167.4	657.1	489.7	444.5	45.2	0.4776	0.2637 ₆₀	3.792 ₉		166
167	5539.0 ₁₃₇	168.4	657.4	489.0	443.7	45.3	0.4800	0.2577 ₅₈	3.880 ₁		167
168	5676.0 ₁₄₀	169.5	657.7	488.2	442.9	45.3	0.4824	0.2519 ₅₇	3.970 ₉₁		168
169	5816.0 ₁₄₃	170.5	658.0	487.5	442.1	45.4	0.4847	0.2462 ₅₅	4.061 ₈₃		169
170	5959.0 ₁₄₅	171.6	658.3	486.8	441.3	45.5	0.4871	0.2407 ₅₃	4.154 ₇₄		170
171	6104.0 ₁₄₇	172.6	658.7	486.1	440.5	45.6	0.4895	0.2354 ₅₂	4.248 ₆₇		171
172	6251.0 ₁₅₁	173.7	659.0	485.3	439.7	45.6	0.4918	0.2302 ₅₁	4.345 ₅₉		172
173	6402.0 ₁₅₃	174.7	659.3	484.6	438.9	45.7	0.4941	0.2251 ₅₀	4.444 ₅₀		173
174	6555.0 ₁₅₇	175.8	659.6	483.8	438.1	45.7	0.4965	0.2201 ₄₈	4.543 ₄₁		174
175	6712.0 ₁₅₉	176.8	659.9	483.1	437.3	45.8	0.4988	0.2153 ₄₇	4.644 ₃₂		175
176	6871.0 ₁₆₂	177.8	660.2	482.4	436.5	45.9	0.5011	0.2106 ₄₅	4.747 ₂₃		176
177	7033.0 ₁₆₅	178.9	660.5	481.6	435.7	45.9	0.5035	0.2061 ₄₄	4.852 ₁₄		177
178	7198.0 ₁₆₈	179.9	660.8	480.9	434.9	46.0	0.5058	0.2017 ₄₂	4.959 ₅		178
179	7366.0 ₁₇₁	181.0	661.1	480.1	434.0	46.1	0.5081	0.1973 ₄₁	5.068 ₄₆		179
180	7537.0 ₁₇₅	182.0	661.4	479.4	433.3	46.1	0.5104	0.1931 ₄₁	5.178 ₃₇		180
181	7712.0 ₁₇₇	183.1	661.7	478.6	432.4	46.2	0.5127	0.1890 ₄₀	5.291 ₂₈		181
182	7889.0 ₁₈₁	184.1	662.0	477.9	431.7	46.2	0.5150	0.1850 ₃₉	5.405 ₁₉		182
183	8070.0 ₁₈₃	185.2	662.3	477.1	430.8	46.3	0.5173	0.1811 ₃₈	5.522 ₁₀		183
184	8253.0 ₁₈₇	186.2	662.6	476.4	430.1	46.3	0.5196	0.1773 ₃₇	5.640 ₁		184
185	8440.0 ₁₉₁	187.3	662.9	475.6	429.2	46.4	0.5219	0.1735 ₃₆	5.760 ₉		185
186	8631.0 ₁₉₃	188.3	663.2	474.9	428.5	46.4	0.5242	0.1700 ₃₆	5.882 ₀		186
187	8824.0 ₁₉₇	189.4	663.5	474.1	427.6	46.5	0.5264	0.1664 ₃₄	6.007 ₉		187
188	9021.0 ₂₀₁	190.4	663.8	473.4	426.9	46.5	0.5287	0.1630 ₃₃	6.134 ₀		188
189	9222.0 ₂₀₄	191.4	664.1	472.7	426.1	46.6	0.5310	0.1597 ₃₃	6.262 ₉		189
190	9426.0 ₂₀₇	192.5	664.5	472.0	425.3	46.7	0.5332	0.1564 ₃₂	6.392 ₀		190

SATURATED STEAM — Concluded.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	DENSITY.		Temperature, Degrees Centi- grade.
<i>t</i>	<i>p</i>	<i>q</i>	<i>λ</i>	<i>r</i>	<i>ρ</i>	<i>Apu</i>	$\int \frac{cdt}{T}$	<i>s</i>	Weight, in Kilob., of one Cubic Meter.	<i>γ</i>	<i>t</i>
191	9633. ²¹¹	193.5	664.8	471.3	424.6	46.7	0.5355	0.1532 ³¹	6.525 ¹³⁶		191
192	9844. ²¹⁴	194.6	665.1	470.5	423.7	46.8	0.5377	0.1501 ³⁰	6.661 ¹³⁷		192
193	10058. ²¹⁸	195.6	665.4	469.8	423.0	46.8	0.5400	0.1471 ³⁰	6.798 ¹³⁷		193
194	10276. ²²²	196.7	665.7	469.0	422.2	46.8	0.5422	0.1441 ²⁹	6.938 ¹⁴²		194
195	10498. ²²⁶	197.7	666.0	468.3	421.4	46.9	0.5444	0.1412 ²⁸	7.080 ¹⁴⁵		195
196	10724. ²²⁹	198.8	666.3	467.5	420.6	46.9	0.5467	0.1384 ²⁷	7.225 ¹⁴⁷		196
197	10953. ²³³	199.8	666.6	466.8	419.8	47.0	0.5489	0.1357 ²⁷	7.372 ¹⁴⁹		197
198	11186. ²³⁸	200.9	666.9	466.0	419.0	47.0	0.5511	0.1330 ²⁷	7.521 ¹⁵¹		198
199	11424. ²⁴⁰	201.9	667.2	465.3	418.2	47.1	0.5533	0.1303 ²⁶	7.672 ¹⁵⁵		199
200	11664. ²⁴⁵	203.0	667.5	464.5	417.4	47.1	0.5555	0.1277 ²⁵	7.827 ¹⁵⁷		200
201	11909. ²⁴⁹	204.0	667.8	463.8	416.7	47.1	0.5577	0.1252 ²⁴	7.984 ¹⁵⁹		201
202	12158. ²⁵³	205.0	668.1	463.1	415.9	47.2	0.5599	0.1228 ²⁴	8.143 ¹⁶²		202
203	12411. ²⁵⁷	206.1	668.4	462.3	415.1	47.2	0.5621	0.1204 ²³	8.305 ¹⁶⁵		203
204	12668. ²⁶²	207.1	668.7	461.6	414.4	47.2	0.5643	0.1181 ²³	8.470 ¹⁶⁹		204
205	12930. ²⁶⁵	208.2	669.0	460.8	413.5	47.3	0.5665	0.1158 ²³	8.639 ¹⁷¹		205
206	13195. ²⁷⁰	209.2	669.3	460.1	412.8	47.3	0.5687	0.1135 ²²	8.810 ¹⁷⁴		206
207	13465. ²⁷⁴	210.3	669.6	459.3	412.0	47.3	0.5709	0.1113 ²¹	8.984 ¹⁷⁶		207
208	13739. ²⁷⁹	211.3	669.9	458.6	411.3	47.3	0.5731	0.1092 ²¹	9.160 ¹⁷⁸		208
209	14018. ²⁸³	212.4	670.2	457.8	410.4	47.4	0.5752	0.1071 ²¹	9.338 ¹⁸¹		209
210	14301. ²⁸⁷	213.4	670.6	457.2	409.8	47.4	0.5774	0.1050 ²⁰	9.519 ¹⁸⁵		210
211	14588. ²⁹²	214.5	670.9	456.4	409.0	47.4	0.5795	0.1030 ¹⁹	9.704 ¹⁹⁰		211
212	14880. ²⁹⁷	215.5	671.2	455.7	408.3	47.4	0.5817	0.1011 ¹⁹	9.894 ¹⁸⁶		212
213	15177. ³⁰¹	216.5	671.5	455.0	407.6	47.4	0.5839	0.0992 ¹⁹	10.08 ²⁰		213
214	15478. ³⁰⁷	217.6	671.8	454.2	406.7	47.5	0.5860	0.0973 ¹⁹	10.28 ²⁰		214
215	15785. ³¹¹	218.6	672.1	453.5	406.0	47.5	0.5881	0.0954 ¹⁸	10.48 ²⁰		215
216	16096. ³¹⁵	219.7	672.4	452.7	405.2	47.5	0.5903	0.0936 ¹⁸	10.68 ²¹		216
217	16411. ³²¹	220.7	672.7	452.0	404.5	47.5	0.5924	0.0918 ¹⁷	10.89 ²¹		217
218	16732. ³²⁶	221.8	673.0	451.2	403.7	47.5	0.5945	0.0901 ¹⁷	11.10 ²¹		218
219	17058. ³³¹	222.8	673.3	450.5	403.0	47.5	0.5967	0.0884 ¹⁶	11.31 ²²		219
220	17389.	223.9	673.6	449.7	402.2	47.5	0.5988	0.0868	11.53		220

TABLE IV.
SATURATED VAPOR OF ETHER

FRENCH UNITS.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid. $\int \frac{cdt}{T}$	Specific Volume.	Density.	
									Weight, in Kilos., of one Cubic Meter.	Temperature, Degrees Centi- grade.
0	184.39	0.00	94.00	94.00	86.45	7.55	0.0000	1.278	0.782	0
10	280.83	5.32	98.44	93.12	85.37	7.75	0.01909	0.8440	1.185	10
20	432.78	10.70	102.78	92.08	84.13	7.96	0.03772	0.5741	1.742	20
30	634.80	16.14	107.00	90.86	82.72	8.14	0.05563	0.4013	2.492	30
40	907.04	21.63	111.11	89.48	81.15	8.33	0.07374	0.2877	3.746	40
50	1264.8	27.19	115.11	87.92	79.41	8.51	0.09117	0.2108	4.744	50
60	1725.0	32.80	119.00	86.20	77.53	8.67	0.1083	0.1580	6.329	60
70	2304.9	38.48	122.78	84.30	75.49	8.81	0.1250	0.1203	8.313	70
80	3022.8	44.21	126.44	82.23	73.32	8.91	0.1415	0.0962	10.73	80
90	3808.3	50.00	130.00	80.00	71.03	8.97	0.1576	0.0731	13.68	90
100	4953.3	55.86	133.44	77.58	68.62	8.96	0.1735	0.0577	17.33	100
110	6214.6	61.77	136.78	75.01	66.13	8.88	0.1891	0.0459	21.79	110
120	7719.2	67.74	140.00	72.26	63.57	8.69	0.2045	0.0364	27.47	120

TABLE V.
SATURATED VAPOR OF ALCOHOL.

FRENCH UNITS.

Temperature, Degrees Centi- grade. <i>t</i>	Pressure, Millimeters of Mercury. <i>p</i>	Heat of the Liquid. <i>q</i>	Total Heat. <i>λ</i>	Heat of Vaporization. <i>r</i>	Heat equivalent of Internal Work. <i>p</i>	Heat equivalent of External Work. <i>Apu</i>	Entropy of the Liquid. $\int \frac{cdt}{T}$	Specific Volume. <i>s</i>	DENSITY.	Temperature, Degrees Centi- grade. <i>t</i>
									Weight, in Kilos, of one Cubic Meter. <i>γ</i>	
0	12.70	0.00	236.5	236.50	223.38	13.12	0.0000	32.21	0.03105	0
10	24.23	5.59	244.4	238.81	225.20	13.52	0.01996	17.39	0.05750	10
20	44.46	11.42	252.0	240.58	226.56	14.02	0.04003	9.847	0.1016	20
30	78.52	17.49	258.0	240.51	226.03	14.48	0.06029	5.753	0.1738	30
40	133.60	23.71	262.0	238.29	223.44	14.85	0.08073	3.465	0.2886	40
50	219.90	30.21	264.0	233.79	218.59	15.10	0.1014	2.143	0.4666	50
60	350.21	37.37	265.0	227.63	212.38	15.25	0.1223	1.359	0.7358	60
70	541.15	44.58	265.2	220.62	205.28	15.34	0.1435	0.8855	1.129	70
80	812.91	52.11	265.2	213.09	197.69	15.40	0.1650	0.5921	1.689	80
90	1189.3	59.97	266.0	206.03	190.54	15.49	0.1868	0.4073	2.455	90
100	1697.6	68.18	267.3	199.12	183.54	15.58	0.2090	0.2874	3.479	100
110	2367.6	76.74	269.6	192.86	177.15	15.71	0.2315	0.2083	4.801	110
120	3231.7	85.67	272.5	186.83	170.97	15.86	0.2544	0.1544	6.477	120
130	4323.0	94.98	276.0	181.02	164.99	16.03	0.2776	0.1170	8.547	130
140	5674.6	104.70	280.5	175.80	159.55	16.25	0.3013	0.0905	11.05	140
150	7318.4	114.82	285.3	170.48	154.03	16.45	0.3254	0.0714	14.01	150

TABLE VI.

SATURATED VAPOR OF CHLOROFORM

FRENCH UNITS.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid, $\int \frac{cdt}{T}$	Specific Volume.	Density.	Temperature, Degrees Centi- grade.
									Weight, in Kilom. of one Cubic Meter.	
0	59.72	0.00	67.00	67.00	62.45	4.55	0.00000	2.377	0.4257	0
10	100.47	2.23	68.38	66.04	61.29	4.75	0.00839	1.475	0.6790	10
20	160.47	4.07	69.75	65.08	60.14	4.94	0.01646	0.9661	1.042	20
30	247.51	7.02	71.12	64.10	59.00	5.10	0.02432	0.6437	1.554	30
40	390.26	9.37	72.50	63.13	57.87	5.26	0.03196	0.4449	2.248	40
50	535.05	11.74	73.87	62.13	56.73	5.40	0.03940	0.3155	3.170	50
60	755.44	14.12	75.25	61.13	55.60	5.53	0.04664	0.2291	4.356	60
70	1042.1	16.51	76.62	60.11	54.45	5.66	0.05369	0.1760	5.88	70
80	1407.6	18.91	78.00	59.09	53.31	5.78	0.06057	0.1286	7.78	80
90	1865.2	21.32	79.37	58.05	52.16	5.89	0.06729	0.0991	10.00	90
100	2428.5	23.74	80.75	57.01	51.01	6.00	0.07386	0.0777	12.87	100
110	3111.0	26.17	82.12	55.95	49.84	6.11	0.08027	0.0618	16.18	110
120	3925.7	28.61	83.50	54.89	48.67	6.22	0.08655	0.0500	20.00	120
130	4885.1	31.06	84.87	53.81	47.48	6.33	0.09270	0.0410	24.39	130
140	6000.2	33.52	86.25	52.73	46.30	6.43	0.09872	0.0340	29.4	140
150	7280.6	35.99	87.62	51.63	45.10	6.53	0.10462	0.0286	35.0	150
160	8794.2	38.47	89.00	50.53	43.90	6.63	0.11041	0.0243	41.2	160

TABLE VII.
SATURATED VAPOR OF CARBON BISULPHIDE

FRENCH UNITS.

Temperature, Degrees Cent. °	Pressure, Millimeters of Mercury. p	Heat of the Liquid. q	Total Heat. λ	Heat of Vaporization. r	Heat equivalent of Internal Work. p	Heat equivalent of External Work. Apu	Entropy of the Liquid. $\int \frac{cdt}{T}$	Specific Volume. s	DENSITY.	Temperature, Degrees Cent. °
									Weight, in Kilos, of one Cubic Meter. γ	
0	127.91	0.00	90.00	90.00	82.76	7.24	0.00000	1.766	0.5662	0
10	198.46	2.36	91.42	89.06	81.58	7.48	0.00847	1.177	0.8496	10
20	298.03	4.74	92.76	88.02	80.31	7.71	0.01670	0.8071	1.239	20
30	434.62	7.13	94.01	86.88	78.97	7.91	0.02472	0.5684	1.759	30
40	617.53	9.54	95.18	85.64	77.54	8.10	0.03252	0.4098	2.440	40
50	857.07	11.96	96.27	84.31	76.04	8.27	0.04013	0.3017	3.315	50
60	1164.5	14.41	97.28	82.87	74.45	8.42	0.04756	0.2264	4.417	60
70	1552.1	16.86	98.20	81.34	72.78	8.56	0.05482	0.1726	5.794	70
80	2032.5	19.34	99.04	79.70	71.03	8.67	0.06192	0.1338	7.473	80
90	2619.1	21.83	99.80	77.97	69.20	8.77	0.06886	0.1052	9.51	90
100	3325.2	24.34	100.48	76.14	67.29	8.85	0.07566	0.0837	11.95	100
110	4164.1	26.86	101.07	74.21	65.31	8.90	0.08233	0.0674	14.84	110
120	5148.8	29.40	101.58	72.18	63.24	8.94	0.08886	0.0549	18.21	120
130	6291.6	31.96	102.01	70.05	61.09	8.96	0.09527	0.0452	22.12	130
140	7604.0	34.53	102.36	67.83	58.88	8.95	0.10157	0.0375	26.7	140
150	9095.9	37.12	102.62	65.50	56.58	8.92	0.10775	0.0314	31.8	150

TABLE VIII.

SATURATED VAPOR OF CARBON TETRACHLORIDE

FRENCH UNITS.

Temperature, Degrees Centigrade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Volume.	Density.	
									Weight, in Kilos, of one Cubic Meter.	Temperature, Degrees Centigrade.
0	32.05	0.00	52.00	52.00	48.54	3.46	0.00000	3.272	0.3056	0
10	55.97	1.90	53.44	51.45	47.85	3.60	0.00714	2.005	0.4987	10
20	90.90	3.99	54.86	50.87	47.13	3.74	0.01400	1.283	0.7794	20
30	142.27	6.02	56.23	50.21	46.33	3.88	0.02087	0.8510	1.175	30
40	214.81	8.06	57.58	49.52	45.51	4.01	0.02749	0.5831	1.715	40
50	314.38	10.12	58.88	48.76	44.62	4.14	0.03396	0.4100	2.434	50
60	447.43	12.20	60.16	47.96	43.69	4.25	0.04028	0.2900	3.368	60
70	621.15	14.30	61.40	47.10	42.75	4.35	0.04648	0.2192	4.562	70
80	843.29	16.42	62.60	46.18	41.74	4.44	0.04255	0.1650	6.061	80
90	1122.3	18.55	63.77	45.22	40.50	4.72	0.05849	0.1263	7.92	90
100	1467.1	20.70	64.90	44.20	39.62	4.58	0.06433	0.0980	10.20	100
110	1887.4	22.87	66.01	43.14	38.52	4.62	0.07006	0.0770	12.90	110
120	2393.7	25.06	67.07	42.01	37.36	4.65	0.07569	0.0611	16.37	120
130	2996.9	27.27	68.10	40.83	36.18	4.65	0.08122	0.0490	20.41	130
140	3709.0	29.49	69.10	39.61	34.95	4.63	0.08666	0.0395	25.3	140
150	4543.1	31.73	70.07	38.34	33.75	4.59	0.09201	0.0321	31.2	150
160	5513.1	34.00	71.00	37.00	32.47	4.53	0.09729	0.0262	38.2	160

TABLE IX.
SATURATED VAPOR OF ACETON.

FRENCH UNITS.

Temperature, Degrees Centi- grade.	Pressure, Millimeters of Mercury.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid, $\int \frac{cdT}{T}$	Specific Volume.	DENSITY. Weight, in Kiloes, of one Cubic Meter.	Temperature, Degrees Centi- grade.
<i>t</i>	<i>p</i>	<i>q</i>	λ	<i>r</i>	<i>p</i>	λp_H	$\int \frac{cdT}{T}$	<i>s</i>	γ	<i>t</i>
0	63.33	0.00	140.50	140.50	131.82	8.68	0.00000	4.275	0.2339	0
10	110.32	5.10	144.11	139.01	129.51	9.50	0.01832	2.686	0.3723	10
20	180.08	10.29	147.62	137.33	127.16	10.17	0.03627	1.758	0.5688	20
30	280.05	15.55	151.03	135.48	124.83	10.65	0.05389	1.187	0.8425	30
40	419.35	20.89	154.33	133.44	121.39	11.05	0.07119	0.8227	1.215	40
50	608.81	26.31	157.53	131.22	119.86	11.36	0.08820	0.5830	1.715	50
60	860.96	31.81	160.63	128.82	117.22	11.60	0.1049	0.4215	2.372	60
70	1189.9	37.39	163.62	126.23	114.43	11.80	0.1214	0.3106	3.220	70
80	1611.1	43.05	166.51	123.46	111.49	11.97	0.1376	0.2328	4.296	80
90	2140.8	48.79	169.30	120.51	108.41	12.10	0.1536	0.1773	5.640	90
100	2796.2	54.61	171.98	117.37	105.17	12.20	0.1694	0.1372	7.289	100
110	3594.3	60.50	174.56	114.06	101.78	12.28	0.1850	0.1076	9.294	110
120	4552.0	66.48	177.04	110.56	98.23	12.33	0.2004	0.0856	11.68	120
130	5684.9	72.54	179.42	106.88	94.53	12.35	0.2156	0.0689	14.51	130
140	7007.6	78.67	181.69	103.02	90.67	12.35	0.2306	0.0561	17.83	140

TABLE X.
SATURATED VAPOR OF AMMONIA.

ENGLISH UNITS.

Temperature, Degrees Fahr. reault.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid.	Specific Vol- ume.	DENSITY. Weight, in Pounds, of one Cubic Foot.	Temperature, Degrees Fahr. reault.
<i>t</i>	<i>p</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>s</i>	<i>Ap</i>	$\int \frac{pdv}{T}$	<i>v</i>	<i>\gamma</i>	<i>t</i>
-40	9.98	-79	519	598	550	48	-0.1787	26.1	0.0383	-40
-35	11.33	-74	520	594	546	48	-0.1607	22.6	0.0442	-35
-30	13.36	-68	522	590	541	49	-0.1482	19.7	0.0507	-30
-25	15.40	-63	523	586	537	49	-0.1354	17.3	0.0580	-25
-20	17.70	-57	525	582	532	50	-0.1229	15.2	0.0660	-20
-15	20.25	-52	526	578	528	50	-0.1102	13.3	0.0750	-15
-10	23.10	-46	528	574	524	50	-0.0982	11.8	0.0848	-10
-5	26.25	-41	529	570	519	51	-0.0859	10.5	0.0956	-5
0	29.74	-35	531	566	515	51	-0.0738	9.32	0.108	0
5	33.58	-30	532	562	511	51	-0.0619	8.31	0.120	5
10	37.80	-24	534	558	506	52	-0.0501	7.44	0.134	10
15	42.43	-19	535	554	502	52	-0.0386	6.68	0.150	15
20	47.49	-13	537	550	497	53	-0.0271	6.02	0.166	20
25	53.01	-8	538	546	493	53	-0.0157	5.43	0.184	25
30	59.01	-2	540	542	489	53	-0.0044	4.92	0.208	30
35	65.53	3	541	538	484	54	0.0067	4.46	0.225	35
40	72.59	9	543	534	480	54	0.0177	4.06	0.247	40
45	80.21	14	544	530	475	55	0.0287	3.70	0.270	45
50	88.44	20	546	526	471	55	0.0395	3.38	0.296	50
55	97.30	25	547	522	467	55	0.0502	3.09	0.323	55
60	106.82	31	549	518	462	56	0.0608	2.84	0.352	60
65	117.04	36	550	514	458	56	0.0713	2.61	0.383	65
70	127.98	42	552	510	454	56	0.0817	2.40	0.416	70
75	139.67	47	553	506	449	57	0.0921	2.22	0.451	75
80	152.15	53	555	502	445	57	0.1023	2.05	0.488	80
85	165.47	58	556	498	441	57	0.1124	1.90	0.527	85
90	179.64	64	558	494	436	58	0.1224	1.76	0.568	90
95	194.70	69	559	490	433	58	0.1324	1.63	0.612	95
100	210.70	75	561	486	428	58	0.1423	1.52	0.657	100

TABLE XI.
SATURATED VAPOR OF SULPHUR DIOXIDE.

ENGLISH UNITS,

Temperature, Degrees Fah- renheit.	Pressure, Pounds per Square Inch.	Heat of the Liquid.	Total Heat.	Heat of Vaporization.	Heat equivalent of Internal Work.	Heat equivalent of External Work.	Entropy of the Liquid. $\int \frac{cdt}{T}$	Specific Vol- ume.	DENSITY. Weight, in pounds, of one Cubic Foot.	Temperature, Degrees Fah- renheit.
<i>t</i>	<i>p</i>	<i>q</i>	<i>h</i>	<i>r</i>	<i>p</i>	<i>Apu</i>	$\int \frac{cdt}{T}$	<i>s</i>	<i>γ</i>	<i>t</i>
−40	3.14	−29	166	195	182	13	−0.0632	23.0	0.0434	−40
−35	3.70	−27	167	194	180	14	−0.0584	19.7	0.0507	−35
−30	4.34	−25	168	193	179	14	−0.0539	17.0	0.0590	−30
−25	5.07	−23	168	191	177	14	−0.0492	14.7	0.0682	−25
−20	5.90	−21	169	190	176	14	−0.0447	12.7	0.0785	−20
−15	6.83	−19	170	189	175	14	−0.0401	11.1	0.0901	−15
−10	7.88	−17	170	187	173	14	−0.0357	9.73	0.103	−10
−5	9.05	−15	171	186	172	14	−0.0312	8.56	0.117	−5
0	10.35	−13	172	185	170	15	−0.0268	7.54	0.133	0
5	11.81	−11	172	183	168	15	−0.0225	6.67	0.150	5
10	13.41	−9	173	182	167	15	−0.0182	5.93	0.169	10
15	15.19	−7	174	181	166	15	−0.0140	5.29	0.189	15
20	17.15	−5	174	179	164	15	−0.0098	4.72	0.212	20
25	19.30	−3	175	178	163	15	−0.0057	4.23	0.236	25
30	21.66	−1	176	177	162	15	−0.0016	3.81	0.263	30
35	24.24	1	176	175	160	15	0.0024	3.43	0.291	35
40	27.06	3	177	174	158	16	0.0064	3.10	0.322	40
45	30.12	5	177	172	156	16	0.0104	2.81	0.356	45
50	33.45	7	178	171	155	16	0.0144	2.58	0.390	50
55	37.07	9	179	170	154	16	0.0182	2.32	0.430	55
60	40.98	11	179	168	152	16	0.0221	2.11	0.473	60
65	45.20	13	180	167	151	16	0.0259	1.94	0.516	65
70	49.75	15	181	166	150	16	0.0297	1.78	0.563	70
75	54.64	17	181	164	148	16	0.0334	1.63	0.614	75
80	59.90	19	182	163	146	17	0.0372	1.50	0.668	80
85	65.54	21	183	162	145	17	0.0409	1.38	0.725	85
90	71.57	23	183	160	143	17	0.0445	1.27	0.786	90
95	78.02	25	184	159	142	17	0.0482	1.18	0.849	95
100	84.90	27	185	158	141	17	0.0518	1.09	0.917	100

TABLE XII.

SPECIFIC GRAVITY AND SPECIFIC VOLUME OF LIQUIDS.

Name of Liquid.	Specific Gravity, compared with Water at 4° C.	Specific Volume, Cubic Meters per Kilo.
Alcohol, C_2H_5O	0.80025 [Mendelejeff, 1869]	0.001240
Ether, $C_4H_{10}O$	0.736 [Kopp, 1860]	0.001358
Chloroform.	1.527 [Thorpe, 1880]	0.000655
Carbon bisulphide, CS_2	1.2922 [Thorpe, 1880]	0.000774
Carbon tetrachloride, CCl_4	1.6320 [Thorpe, 1880]	0.000613
Aceton, C_2H_4O	0.81 [Zander, 1882]	0.00123
Sulphur Dioxide SO_2	1.4336 [Andréeff, 1850]	0.000681
Ammonia NH_3	0.6304 [Andréeff, 1850]	0.001571

TABLE XIII.

VOLUME OF WATER.

Vol. at 4° C=1.

[Rossetti, 1871] and [Hirn, 1867.]

Tempera- ture.	Volume.	Tempera- ture.	Volume.	Tempera- ture.	Volume.	Tempera- ture.	Volume.
10	1.000253	60	1.01601	110	1.0512	160	1.1018
20	1.001744	70	1.02256	120	1.0569	170	1.1139
30	1.00425	80	1.02887	130	1.0604	180	1.1268
40	1.00770	90	1.03507	140	1.0705	190	1.1403
50	1.01195	100	1.04312	150	1.0903	200	1.1544

NAPERIAN LOGARITHMS.

$$e = 2.7182818 \quad \log e = 0.4342945 = M$$

	0	1	2	3	4	5	6	7	8	9
1.0	0.0000	0.00995	0.01980	0.02956	0.03922	0.04879	0.05827	0.06766	0.07696	0.08618
1.1	0.09531	0.1044	0.1133	0.1222	0.1310	0.1398	0.1484	0.1570	0.1655	0.1739
1.2	0.1823	0.1906	0.1988	0.2070	0.2151	0.2231	0.2311	0.2390	0.2469	0.2546
1.3	0.2624	0.2700	0.2776	0.2852	0.2927	0.3001	0.3075	0.3148	0.3221	0.3293
1.4	0.3365	0.3436	0.3507	0.3577	0.3646	0.3716	0.3784	0.3853	0.3920	0.3988
1.5	0.4055	0.4121	0.4187	0.4253	0.4318	0.4382	0.4447	0.4511	0.4574	0.4637
1.6	0.4700	0.4762	0.4824	0.4886	0.4947	0.5008	0.5068	0.5128	0.5188	0.5247
1.7	0.5306	0.5365	0.5423	0.5481	0.5539	0.5596	0.5653	0.5710	0.5766	0.5822
1.8	0.5878	0.5933	0.5988	0.6043	0.6098	0.6152	0.6206	0.6259	0.6313	0.6366
1.9	0.6418	0.6471	0.6523	0.6575	0.6627	0.6678	0.6729	0.6780	0.6831	0.6881
2.0	0.6931	0.6981	0.7031	0.7080	0.7129	0.7178	0.7227	0.7275	0.7324	0.7372
2.1	0.7419	0.7467	0.7514	0.7561	0.7608	0.7655	0.7701	0.7747	0.7793	0.7839
2.2	0.7884	0.7930	0.7975	0.8020	0.8065	0.8109	0.8154	0.8198	0.8242	0.8286
2.3	0.8329	0.8372	0.8416	0.8459	0.8502	0.8544	0.8587	0.8629	0.8671	0.8713
2.4	0.8755	0.8796	0.8838	0.8879	0.8920	0.8961	0.9002	0.9042	0.9083	0.9123
2.5	0.9163	0.9203	0.9243	0.9282	0.9322	0.9361	0.9400	0.9439	0.9478	0.9517
2.6	0.9555	0.9594	0.9632	0.9670	0.9708	0.9746	0.9783	0.9821	0.9858	0.9895
2.7	0.9933	0.9969	1.0006	1.0043	1.0080	1.0116	1.0152	1.0188	1.0225	1.0260
2.8	1.0296	1.0332	1.0367	1.0403	1.0438	1.0473	1.0508	1.0543	1.0578	1.0613
2.9	1.0647	1.0682	1.0716	1.0750	1.0784	1.0818	1.0852	1.0886	1.0919	1.0953
3.0	1.0986	1.1019	1.1053	1.1086	1.1119	1.1151	1.1184	1.1217	1.1249	1.1282
3.1	1.1314	1.1346	1.1378	1.1410	1.1442	1.1474	1.1506	1.1537	1.1569	1.1600
3.2	1.1632	1.1663	1.1694	1.1725	1.1756	1.1787	1.1817	1.1848	1.1878	1.1909
3.3	1.1939	1.1969	1.2000	1.2030	1.2060	1.2090	1.2119	1.2149	1.2179	1.2208
3.4	1.2238	1.2267	1.2296	1.2326	1.2355	1.2384	1.2413	1.2442	1.2470	1.2499
3.5	1.2528	1.2556	1.2585	1.2613	1.2641	1.2669	1.2698	1.2726	1.2754	1.2782
3.6	1.2809	1.2837	1.2865	1.2892	1.2920	1.2947	1.2975	1.3002	1.3029	1.3056
3.7	1.3083	1.3110	1.3137	1.3164	1.3191	1.3218	1.3244	1.3271	1.3297	1.3324
3.8	1.3350	1.3376	1.3403	1.3429	1.3455	1.3481	1.3507	1.3533	1.3558	1.3584
3.9	1.3610	1.3635	1.3661	1.3686	1.3712	1.3737	1.3762	1.3788	1.3813	1.3838
4.0	1.3863	1.3888	1.3913	1.3938	1.3962	1.3987	1.4012	1.4036	1.4061	1.4085
4.1	1.4110	1.4134	1.4159	1.4183	1.4207	1.4231	1.4255	1.4279	1.4303	1.4327
4.2	1.4351	1.4375	1.4398	1.4422	1.4446	1.4469	1.4493	1.4516	1.4540	1.4563
4.3	1.4586	1.4609	1.4633	1.4656	1.4679	1.4702	1.4725	1.4748	1.4770	1.4793
4.4	1.4816	1.4839	1.4861	1.4884	1.4907	1.4929	1.4951	1.4974	1.4996	1.5019
4.5	1.5041	1.5063	1.5085	1.5107	1.5129	1.5151	1.5173	1.5195	1.5217	1.5239
4.6	1.5261	1.5282	1.5304	1.5326	1.5347	1.5369	1.5390	1.5412	1.5433	1.5454
4.7	1.5476	1.5497	1.5518	1.5539	1.5560	1.5581	1.5602	1.5623	1.5644	1.5665
4.8	1.5686	1.5707	1.5728	1.5748	1.5769	1.5790	1.5810	1.5831	1.5851	1.5872
4.9	1.5892	1.5913	1.5933	1.5953	1.5974	1.5994	1.6014	1.6034	1.6054	1.6074
5.0	1.6094	1.6114	1.6134	1.6154	1.6174	1.6194	1.6214	1.6233	1.6253	1.6273
5.1	1.6292	1.6312	1.6332	1.6351	1.6371	1.6390	1.6409	1.6429	1.6448	1.6467
5.2	1.6487	1.6506	1.6525	1.6544	1.6563	1.6582	1.6601	1.6620	1.6639	1.6658
5.3	1.6677	1.6696	1.6715	1.6734	1.6752	1.6771	1.6790	1.6808	1.6827	1.6845
5.4	1.6864	1.6882	1.6901	1.6919	1.6938	1.6956	1.6974	1.6993	1.7011	1.7029
5.5	1.7047	1.7066	1.7084	1.7102	1.7120	1.7138	1.7156	1.7174	1.7192	1.7210
5.6	1.7228	1.7246	1.7263	1.7281	1.7299	1.7317	1.7334	1.7352	1.7370	1.7387

NAPERIAN LOGARITHMS.

	0	1	2	3	4	5	6	7	8	9
5.7	1.7405	1.7432	1.7440	1.7457	1.7475	1.7494	1.7509	1.7527	1.7544	1.7561
5.8	1.7579	1.7596	1.7613	1.7630	1.7647	1.7664	1.7681	1.7699	1.7716	1.7733
5.9	1.7750	1.7766	1.7783	1.7800	1.7817	1.7834	1.7851	1.7867	1.7884	1.7901
6.0	1.7918	1.7934	1.7951	1.7967	1.7984	1.8001	1.8017	1.8034	1.8050	1.8066
6.1	1.8083	1.8099	1.8116	1.8133	1.8148	1.8165	1.8181	1.8197	1.8213	1.8229
6.2	1.8245	1.8262	1.8278	1.8294	1.8310	1.8326	1.8342	1.8358	1.8374	1.8390
6.3	1.8405	1.8421	1.8437	1.8453	1.8469	1.8485	1.8500	1.8516	1.8532	1.8547
6.4	1.8563	1.8579	1.8594	1.8610	1.8625	1.8641	1.8656	1.8672	1.8687	1.8703
6.5	1.8718	1.8733	1.8749	1.8764	1.8779	1.8795	1.8810	1.8825	1.8840	1.8856
6.6	1.8871	1.8886	1.8901	1.8916	1.8931	1.8946	1.8961	1.8976	1.8991	1.9006
6.7	1.9021	1.9036	1.9051	1.9066	1.9081	1.9095	1.9110	1.9125	1.9140	1.9155
6.8	1.9169	1.9184	1.9199	1.9213	1.9228	1.9243	1.9257	1.9272	1.9286	1.9301
6.9	1.9315	1.9330	1.9344	1.9359	1.9373	1.9387	1.9402	1.9416	1.9430	1.9445
7.0	1.9459	1.9473	1.9488	1.9502	1.9516	1.9530	1.9544	1.9559	1.9573	1.9587
7.1	1.9601	1.9615	1.9629	1.9643	1.9657	1.9671	1.9685	1.9699	1.9713	1.9727
7.2	1.9741	1.9755	1.9769	1.9783	1.9797	1.9811	1.9824	1.9838	1.9852	1.9865
7.3	1.9879	1.9892	1.9906	1.9920	1.9933	1.9947	1.9961	1.9974	1.9988	2.0001
7.4	2.0015	2.0028	2.0042	2.0055	2.0069	2.0082	2.0096	2.0109	2.0122	2.0136
7.5	2.0149	2.0162	2.0176	2.0189	2.0202	2.0215	2.0228	2.0241	2.0254	2.0268
7.6	2.0281	2.0295	2.0308	2.0321	2.0334	2.0347	2.0360	2.0373	2.0386	2.0399
7.7	2.0412	2.0425	2.0438	2.0451	2.0464	2.0477	2.0490	2.0503	2.0516	2.0528
7.8	2.0541	2.0554	2.0567	2.0580	2.0592	2.0605	2.0618	2.0631	2.0643	2.0656
7.9	2.0668	2.0681	2.0694	2.0707	2.0719	2.0732	2.0744	2.0757	2.0769	2.0781
8.0	2.0794	2.0807	2.0819	2.0832	2.0844	2.0857	2.0869	2.0881	2.0894	2.0906
8.1	2.0919	2.0931	2.0943	2.0956	2.0968	2.0980	2.0992	2.1005	2.1017	2.1029
8.2	2.1041	2.1054	2.1066	2.1078	2.1090	2.1102	2.1114	2.1126	2.1138	2.1150
8.3	2.1163	2.1175	2.1187	2.1199	2.1211	2.1223	2.1235	2.1247	2.1258	2.1270
8.4	2.1282	2.1294	2.1306	2.1318	2.1330	2.1342	2.1353	2.1365	2.1377	2.1389
8.5	2.1401	2.1412	2.1424	2.1436	2.1448	2.1459	2.1471	2.1483	2.1494	2.1506
8.6	2.1518	2.1529	2.1541	2.1552	2.1564	2.1576	2.1587	2.1599	2.1610	2.1622
8.7	2.1633	2.1645	2.1656	2.1668	2.1679	2.1691	2.1702	2.1713	2.1725	2.1736
8.8	2.1748	2.1759	2.1770	2.1782	2.1793	2.1804	2.1815	2.1827	2.1838	2.1849
8.9	2.1861	2.1872	2.1883	2.1894	2.1905	2.1917	2.1928	2.1939	2.1950	2.1961
9.0	2.1972	2.1983	2.1994	2.2005	2.2017	2.2028	2.2039	2.2050	2.2061	2.2072
9.1	2.2083	2.2094	2.2105	2.2116	2.2127	2.2138	2.2148	2.2159	2.2170	2.2181
9.2	2.2192	2.2203	2.2214	2.2225	2.2235	2.2246	2.2257	2.2268	2.2279	2.2289
9.3	2.2300	2.2311	2.2322	2.2332	2.2343	2.2354	2.2364	2.2375	2.2385	2.2396
9.4	2.2407	2.2418	2.2428	2.2439	2.2450	2.2460	2.2471	2.2481	2.2492	2.2502
9.5	2.2513	2.2523	2.2534	2.2544	2.2555	2.2565	2.2576	2.2586	2.2597	2.2607
9.6	2.2618	2.2628	2.2638	2.2649	2.2659	2.2670	2.2680	2.2690	2.2701	2.2711
9.7	2.2721	2.2732	2.2742	2.2752	2.2762	2.2773	2.2783	2.2793	2.2803	2.2814
9.8	2.2824	2.2834	2.2844	2.2854	2.2865	2.2875	2.2885	2.2895	2.2905	2.2915
9.9	2.2925	2.2935	2.2946	2.2956	2.2966	2.2976	2.2986	2.2996	2.3006	2.3016
10.0	2.3026									

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